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## A Case For University Credits For Industry's In-house Continuing Education Programs

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SPE 2949

A CASE FOR UNIVERSITY CREDITS FOR  
INDUSTRY'S IN-HOUSE CONTINUING  
EDUCATION PROGRAMS

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TO BE PRESENTED AT  
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ABSTRACT

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THAT COMPANY'S PERSONNEL, IN THAT COMPANY'S FACILITIES,  
FOR THE COMPANY'S EMPLOYEES, IS PRESENTED. THE CASE  
FOR SUCH UNIVERSITY CREDIT TO THE PARTICIPANTS OF THESE  
SESSIONS IS DISCUSSED AS WELL AS THE MEANS OF OVERCOMING  
THE DIFFICULTIES SUCH A CONCEPT POSES TO A UNIVERSITY IN  
ESTABLISHING THE CRITERION FOR CREDIT VALUES OF SUCH  
OFFERINGS.

THE PETROLEUM INDUSTRY, WHILE NOT UNIQUE AMONG OTHER PROGRESSIVE INDUSTRIES IN THE U.S., HAS FOR YEARS CONCENTRATED A SIGNIFICANT PERCENTAGE OF ITS MANPOWER, RESOURCES AND PERSONNEL IN THE AREA OF MAINTAINING THEIR PROFESSIONAL TALENT. INCENTIVES, BONUSES, PROFIT SHARING AND MERIT RAISES HAVE ALL BEEN METHODS EMPLOYED BY THE INDUSTRY IN MAINTAINING THIS TALENT. FOR THE MOST PART, EXCEPT FOR THE MERIT RAISE, THESE CONCEPTS HAVE GONE BY THE WAYSIDE.

IN ONE AREA, HOWEVER, ALMOST EVERY OIL/GAS COMPANY OF MODERATE TO GIANT SIZE HAS CONTINUED TO DEVOTE A SIGNIFICANT EFFORT. THIS IS THE AREA OF CONTINUING EDUCATION OF THEIR PROFESSIONAL PERSONNEL.

WHILE THESE EFFORTS PURSUE MANY DIFFERENT PATHS IN ACHIEVING THEIR INDIVIDUAL GOALS, THE OBJECTIVES ARE SIMILAR; A CONTINUING INTRODUCTION OF NEW TECHNIQUES, NEW APPROACHES, NEW CONCEPTS OR NEW TOOLS AND THEIR APPLICATIONS TO THE PERSONNEL CHARGED WITH THE USE OF THIS INFORMATION. OFTENTIMES, RATHER THAN THE NEW, THIS 'CONTINUING EDUCATION' ASSUMES A ROLE OF REINTRODUCING THE PARTICIPANT TO CONCEPTS HE MAY HAVE PREVIOUSLY HAD BUT WHICH HAVE GROWN STALE DUE TO THE LACK OF USE OR BY HIS PREOCCUPATION WITH HIS DAILY DUTIES.

LET'S SPEND A MOMENT AND LOOK AT THREE OF THE MOST WIDELY USED FORMS THIS CONTINUING EDUCATION ASSUMES. THE MOST COMMON FORM IS THE WORKSHOP OFFERED BY A PRIVATE CONCERN OR A UNIVERSITY. THIS PAST YEAR, IF ONE TALLIED

ONLY THE OFFERINGS OF THE TOP 50 UNIVERSITIES, HE WOULD NOTE THAT THERE WERE OVER 1700 WORKSHOPS AVAILABLE TO INDUSTRY RANGING FROM FIVE DAYS TO SIX WEEKS DURATION. THE PETROLEUM INDUSTRY HAS, FOR THE PAST TWO DECADES, SUPPORTED THIS TYPE OF EDUCATION FOR THEIR PERSONNEL BY PERMITTING SELECTED PARTICIPATION. AND, THIS IS NO SMALL MATTER, MONEYWISE, IF ONE STOPS TO TALLY THE COST OF SUCH PARTICIPATION. LET'S ASSUME WE HAVE AN ENGINEER MR. SMITH WITH A B.S. DEGREE AND TEN YEARS OF SERVICE WITH COMPANY X. MR. SMITH EARNS AN ANNUAL SALARY OF \$14,000 AND IS BASED IN HOUSTON, TEXAS. FURTHER, WE SHALL ASSUME HE IS BEING PERMITTED TO ATTEND THE 'FORTRAN PROGRAMMING AND MATHEMATICAL TECHNIQUES FOR ENGINEERS' TWO WEEK WORKSHOP IN ROLLA, MISSOURI. THE 'COST' OF SUCH PARTICIPATION WOULD BE:

AIR TRAVEL - HOUSTON, ST. LOUIS (ROUND TRIP)	.\$106.00
CAR RENTAL - TWO WEEKS . . . . .	136.00
ROOM/BOARD - TWO WEEKS . . . . .	378.00
WORKSHOP FEE . . . . .	325.00
PARTICIPANTS SALARY . . . . .	538.00
TOTAL COMPANY COST PARTICIPATION . . . . .	.\$1483.46

AN INTERESTING FIGURE WHEN ONE MULTIPLIES THIS BY 20 TO 50 SUCH PERSONNEL OF COMPANY X PARTICIPATING IN SUCH WORKSHOPS EACH YEAR.

THE SECOND TYPE OF INDUSTRY EDUCATION IS AN 'IN-HOUSE' WORKSHOP OR SEMINAR EMPLOYING AN OUTSIDE CONSULTANT OR PROFESSOR WHO TRAVELS TO A CENTRAL OFFICE OF COMPANY X TO PRESENT THE PROGRAM, OR, IF HE IS LUCKY, TO A RESORT AREA WHICH PROVIDES THE PARTICIPANTS WITH AN R AND R BONUS WHILE THEY LEARN. ON THE AVERAGE, THIS TYPE OF WORKSHOP PRESENTS THE SAME SUBJECT TO MORE OF COMPANY X'S PERSONNEL AND, FOR THE NUMBER OF PERSONNEL INVOLVED, WILL AVERAGE SOME 25 TO 35 PERCENT LESS COST THAN IF THE SAME NUMBER OF PERSONNEL PARTICIPATED IN INDIVIDUAL SEMINARS NOT SPONSORED BY THE COMPANY.

THE THIRD TYPE IS THAT OF PRINCIPAL INTEREST TO THIS DISCUSSION; THE 'IN-HOUSE' COMPANY WORKSHOPS OFFERED TO THE PERSONNEL OF THAT COMPANY IN THE COMPANY'S FACILITIES BY COMPANY 'LECTURERS'. WE ARE ALL AWARE OF COMPANIES IN OUR INDUSTRY THAT OFFER SUCH WORKSHOPS TO THEIR PERSONNEL. WHILE I AM CERTAIN THAT I SHALL MISS SOME, SUCH COMPANIES AS SHELL OIL, CONTINENTAL OIL, MOBIL OIL, MARATHON, STANDARD OIL OF CALIFORNIA, ATLANTIC RICHFIELD, HUMBLE, PHILLIPS PETROLEUM, AND UNION OIL OF CALIFORNIA COME TO MIND. OF COURSE, THE VARIETY AND NUMBER OF SUCH EDUCATION PROGRAMS DIFFER WITH COMPANIES. SOME OFFER AS MANY AS 50, OTHERS AS FEW AS THREE OR FOUR EACH YEAR.

BUT, THE POINT IS STILL PRESENT; THE SPECIFIC COMPANIES OF OUR INDUSTRY ARE COMMITTED TO THE COST, EFFORT

AND PHILOSOPHY OF MAINTAINING THE PROFESSIONAL COMPETENCE OF THEIR KEY PERSONNEL AND OF THEIR TECHNICAL PERSONNEL.

PERMIT ME TO REDUCE THE VARIETY OF SUCH OFFERINGS POSSIBLE AND THE VARIANT APPROACHES ACROSS COMPANIES BY CONCENTRATING ON COMPANY X AND SEE IF A POINT CAN BE MADE.

COMPANY X IS CONSIDERED A MAJOR DIVERSIFIED OIL COMPANY RANKING AMONG THE TOP 35 IN THE INDUSTRY. ITS PERSONNEL NUMBER APPROXIMATELY 35,000; ITS TECHNICAL PERSONNEL NUMBER APPROXIMATELY 6,000. DURING THE COURSE OF A FISCAL YEAR IT OFFERS SOME 30 'IN HOUSE' WORKSHOPS AND TRAINING PROGRAMS TO ITS PERSONNEL WHERE THESE PERSONNEL ARE RELIEVED OF THEIR NORMAL DUTIES TO ATTEND SUCH PROGRAMS. AT EACH OFFERING, TRAINED AND HIGHLY QUALIFIED PERSONNEL OF THE COMPANY PRESENT THE TOPICS, CONDUCT THE LECTURES, OVERSEE THE EXERCISES, AND LEAD THE PARTICIPANTS THROUGH CASE HISTORIES. THESE LECTURERS ARE PERMANENT EMPLOYEES OF THE COMPANY WITH A MAJORITY OF THEM HAVING AS THEIR MAJOR JOB RESPONSIBILITY THESE WORKSHOPS AND THE CONTINUING EDUCATION PROGRAMS OF THAT COMPANY.

FIRST, I PROPOSE THAT COMPANY X IS TOTALLY COMMITTED TO THIS DESIRE OF CONTINUING EDUCATION AND ITS VALUE TO THEIR PERSONNEL.

SECONDLY, COMPANY X IS OBVIOUSLY WILLING TO COMMIT THE THOUSANDS OF DOLLARS TO THE EFFORT NECESSARY TO MAKE IT THE QUALITY EFFORT DESIRED.



THIRDLY, THAT THIS TOTAL PROGRAM OF COMPANY X REQUIRES THAT THE LECTURERS AND MATERIAL BE OF THE HIGHEST QUALITY OBTAINABLE AND THAT THE MATERIAL PRESENTED IS OF THE HIGHEST PRIORITY TO THE CONTINUING IMPROVEMENT OF THEIR PROFESSIONAL PERSONNEL.

FOURTHLY, AND MOST IMPORTANTLY, THAT THE EFFORT OF EDUCATION BEING PURSUED BY THIS COMPANY AND BY IN LARGE BY THE MAJORITY OF ITS COLLEAGUE COMPANIES IS AS EFFECTIVE FOR THE GOALS DESIRED AS THOSE EDUCATIONAL PURSUITS EMPLOYED BY ANY OF THE 50 MAJOR UNIVERSITIES PREVIOUSLY REFERENCED.

WITH THESE FOUR POINTS IN MIND, A QUESTION EVOLVES.

"If these four points are actively pursued in a company of the oil industry, why cannot the participants of such quality education efforts receive, if they so elect, university credits for the successful attainment of such education?"

THE UNDERSIGNED WILL BE THE FIRST TO ADMIT THIS QUESTION WILL BE VERY COLDLY RECEIVED BY SOME. IN PARTICULAR BY MANY EDUCATORS WHO VIEW THE sanctum-sanctorum OF UNIVERSITY EDUCATION AS ONLY BEING SUITABLE WHEN PRESENTED BY UNIVERSITY PROFESSORS. SUCH DISCUSSIONS MAY BE ARGUED IN SUBSEQUENT PRESENTATIONS BUT WE SHALL CONCENTRATE ON SOME OF THE 'WHY NOT'S' OR 'HOW'S' OF THE ABOVE QUESTION.

By what means could the above concept be effectively accomplished?

1. BY THE UNIVERSITY GRADUATE COUNCIL OF THE UNIVERSITY COMING TO GRIPS WITH THE QUESTION AND

APPROVING THE AWARDING OF SUCH GRADUATE CREDIT TO THOSE PARTICIPANTS OF OFFERINGS WHICH MEET THE CRITERION ESTABLISHED BY THAT UNIVERSITY.

2. THESE CRITERION COULD INCLUDE:

A. THE COMPETENCE AND CAPABILITY OF THE LECTURER(S) IN THE MATERIAL PRESENTED.

ACCOMPLISHED BY:

A REVUE GROUP FROM THE UNIVERSITY (IN THE DISCIPLINE OF THE COURSE) EVALUATING THE LECTURER(S), HIS (THEIR) BACKGROUND(S), HIS (THEIR) EXPERIENCE IN THE MATERIAL OF THE COURSE; IN PERSONAL DISCUSSIONS, IN ACTUAL PARTICIPATION IN PART OR ALL OF THE COURSE UNDER EVALUATION.

ONE VITAL OBSERVATION MUST BE MADE AT THIS POINT OR THE CONCEPT IS MEANINGLESS. THAT IS THAT THE COMPANY HAS INVESTED AND CONTINUES TO INVEST A GREAT DEAL OF MONEY, TIME, AND EFFORT IN SUCH COURSES AND THEY MUST BE SATISFIED, BEFORE ANY UNIVERSITY ARRIVES ON THE SCENE, THAT THE OBJECTIVES AND BENEFITS OF THE EFFORT ARE BEING MET TO THE UTMOST OF THEIR ABILITIES. IF THIS IS NOT TRUE, THEN THE COMPANY, THE PARTICIPANTS AND THE UNIVERSITY ARE FOOLING THEMSELVES DANGEROUSLY.

B. ASCERTAINING THAT THE COURSE CONTENT IS OF A NATURE AND QUALITY TO WARRANT UNIVERSITY CREDIT.

ACCOMPLISHED BY:

THE SAME REVUE GROUP FROM THE UNIVERSITY EVALUATING THE LECTURE MATERIAL, THE PROBLEMS GIVEN, THE ACCOMPLISHMENT OF THE OBJECTIVES OF THE COURSE BEING ACHIEVED, THE EXAMPLES USED AND THEIR MERIT IN EXEMPLIFYING THE MATERIAL, TESTS AND THEIR REPRESENTATIVENESS (IF SUCH ARE GIVEN).

C. THAT THE UNIVERSITY AND FACULTY ARE WILLING TO CONCEDE THAT EDUCATION UP TO THEIR STANDARDS CAN BE ACHIEVED OUTSIDE OF THEIR IVY COVERED WALLS.

ACCOMPLISHED BY:

THE ACCEPTANCE BY THE GRADUATE COUNCIL OF THE REVUE GROUPS EVALUATIONS THAT COMPANY X'S EFFORTS, OBJECTIVES AND PERSONNEL MEET THE STANDARDS OF EXCELLENCE REQUIRED BY THEIR UNIVERSITY AND THE COURSES MERIT THE CREDITS BEING CONTEMPLATED.

TO THIS END, THE REVUE GROUP COULD INSIST THAT A 'FINAL EXAM' BE GIVEN THE PARTICIPANTS TO PASS BEFORE CREDIT IS GIVEN, THIS 'FINAL' BEING PREVIOUSLY COMPOSED BY OR APPROVED BY THE FACULTY OR THE REVUE BOARD.

How could the mechanics of the issuance of such credit be implemented?

1. COMPANY X INFORMS THE UNIVERSITY THAT IT HAS A COURSE OR A GROUP OF COURSES IT WISHES THE UNIVERSITY TO EVALUATE FOR COLLEGE CREDIT CONSIDERATIONS.
2. UNIVERSITY FACULTY ARE ASSIGNED TO EVALUATE EACH WORKSHOP, ITS LECTURER(S), ITS COURSE CONTENT, ITS QUALITY AND ITS LENGTH OF PRESENTATION. A PER COURSE FEE IS PAID BY THE COMPANY TO THE UNIVERSITY, AND SUBSEQUENTLY TO THE EVALUATION BOARD FACULTY FOR THEIR REVIEW AS AN EVALUATION FEE.
3. THIS REVIEW BOARD WOULD RECOMMEND Z CREDITS TO BE AWARDED EACH PARTICIPANT OF THE WORKSHOP UPON HIS SUCCESSFUL COMPLETION OF THE COURSE, OR RECOMMEND THAT NO CREDITS BE SO AUTHORIZED. A SUBSEQUENT ANALYSIS FROM THE REVUE BOARD COULD BE REQUESTED BY THE COMPANY ON THE WEAKNESSES WHICH WARRENTED THE REFUSAL WHICH, IF STRENGTHENED OR CORRECTED, WOULD PERMIT SUBSEQUENT CREDIT AUTHORIZATION. THE REGISTRAR'S OFFICE OF THE UNIVERSITY WOULD BE SO INFORMED OF THE REVUE BOARDS RECOMMENDATIONS AND IF POSITIVE, WOULD ESTABLISH SUCH CREDIT ISSUANCE FOR THE COURSE COMPLETION.

4. THE COMPANY WOULD INFORM THE REGISTRAR AND THE REVIEW BOARD (AT LEAST 2-4 WEEKS IN ADVANCE) OF THE COURSE PARTICIPANTS.

AT THE COMPLETION OF THE COURSE, AND PRESUMABLY AT THE SUCCESSFUL COMPLETION OF AN APPROVED 'FINAL' BY EACH PARTICIPANT, CREDITS WOULD BE REGISTERED ON EACH PARTICIPANTS 'TRANSCRIPT' MAINTAINED AT THE UNIVERSITY. A 'TUITION FEE', AGREED TO BETWEEN THE COMPANY AND THE UNIVERSITY IS THEN PAID FOR EACH PARTICIPANT BY THE COMPANY TO OFFSET ADMINISTRATIVE COSTS.

5. WHEN A COMPANY EMPLOYEE WHO WISHES TO COMPLETE THE GRADUATE DEGREE ACCRUES 18 HOURS (OR A SIMILAR NUMBER) OF SUCH 'IN-HOUSE' CREDITS, HE WOULD BE REQUIRED TO PURSUE THE REMAINING 16 OR SO HOURS BY FULL ATTENDANCE FOR ONE SEMESTER AT THAT UNIVERSITY CONCURRENTLY SATISFYING HIS RESIDENCE REQUIREMENTS. THE DETAILS OF THE IN-HOUSE ARRANGEMENTS FOR SUCH A THREE MONTH LEAVE WOULD BE BETWEEN COMPANY X AND THEIR PERSONNEL. ONE SUCH GRADUATE DEGREE HIGHLY SUITED TO THIS CONCEPT IS THE MASTER OF ENGINEERING DEGREE WHICH WOULD NOT REQUIRE A THESIS. IT EXEMPLIFIES THE SUCCESSFUL COMPLETION OF FIRST-LEVEL GRADUATE TRAINING BUT IS DEFINITELY LESS THE OBLIGATIONS THAN THE MASTER OF SCIENCE DEGREE.

WE SHALL CONCLUDE WITH A 'TYPICAL PROGRAM AS PURSUED BY MR. SMITH SINCE HIS GRADUATION IN 1960. WE SHALL ASSUME THAT COMPANY X HAD A CERTIFICATION FROM A UNIVERSITY FOR EACH OF THE IN-HOUSE WORKSHOPS PRESENTED OVER THIS DECADE.

<u>Mo./Yr.</u>	<u>TITLE OF WORKSHOP</u>	<u>LENGTH</u>	<u>GRADE</u>	<u>AUTHORIZED CREDITS</u>
6/60	PRINCIPLES OF WELL PUMPING	5 ½ DAYS	PASS	.75
6/61	DRILLING ENGINEERING	5 DAYS	PASS	1.50
1/62	RESERVOIR ENGINEERING I	10 DAYS	B	1.60
7/62	HYDRAULIC PUMPING PRINCIPLES AND TECHNIQUES	5 ½ DAYS	PASS	.75
1/63	BASIC LOGGING	7 ½ DAYS	PASS	1.50
6/63	PRINCIPLES OF WATERFLOODING	8 DAYS	A	1.40
1/64	RESERVOIR ENGINEERING II	10 DAYS	B	1.80
6/65	CORROSION	5 DAYS	PASS	1.50
7/66	ADVANCED LOGGING	7 ½ DAYS	PASS	1.50
6/67	WELL STIMULATION ANALYSES	10 DAYS	B	2.00
8/68	PRESSURE BUILDUP/DRAWDOWN ANALYSIS	8 DAYS	PASS	2.10
6/69	PRINCIPLES OF MANAGEMENT	7 DAYS	A	1.90
TOTAL TRANSCRIPT CREDITS				18.30

ASSUMING THAT THE UNIVERSITY OFFERED A MASTER OF ENGINEERING DEGREE REQUIRING 34 CREDITS (AND THAT ALL OF THE 18 HOURS ABOVE WERE APPROVED FOR THIS GRADUATE CREDIT), MR. SMITH COULD THEN PREPARE FOR A SEMESTER LEAVE REQUEST DURING WHICH TIME HE COULD COMPLETE THE ADDITIONAL 16 HOURS

AND FULFILL HIS RESIDENCY. THE PRINCIPAL WEAKNESS OF THE ABOVE HYPOTHETICAL CASE IS THE ASSUMPTION THAT ALL OF THE ACCRUED CREDITS FROM HIS IN-HOUSE EFFORTS WOULD QUALIFY AS GRADUATE LEVEL CREDITS.

## CONCLUSIONS

ONE APPROACH HAS BEEN GIVEN TO THE CONCEPT OF UNIVERSITY CREDITS BEING AWARDED TO QUALITY INDUSTRY IN-HOUSE EDUCATION WORKSHOPS.

TO BE EFFECTIVE AND MEANINGFUL, SUCH A CONCEPT WOULD REQUIRE A PROFESSIONAL RECOGNITION ON THE PARTS OF BOTH THE UNIVERSITY AND THE COMPANY THAT BOTH ARE SEEKING THE SAME GOALS AND STRIVING TO ATTAIN THESE GOALS IN THE BEST MANNER POSSIBLE.

ONE OF THE MORE TANGIBLE RESULTS OF SUCH AN EFFORT WOULD BE THE ULTIMATE RECEIPT BY AN ENGINEER OF A UNIVERSITY GRADUATE DEGREE FOR HIS CONTINUING PURSUIT OF THESE PROFESSIONAL EFFORTS WHILE IMPROVING HIS DAILY CAPABILITIES IN HIS TECHNICAL JOB.

THE CONCEPT PROPOSED CAN BE EXTENDED TO AUTHORIZE GRADUATE CREDITS FOR AN ENGINEER WHO SATISFIES THE PARTICIPATION REQUIREMENTS OF THE VAST NUMBER OF WORKSHOPS OFFERED AT OTHER UNIVERSITIES.

THE CONCEPT PROPOSED WOULD WORK TO THE BENEFIT OF THE INDIVIDUAL COMPANIES OF THE PETROLEUM INDUSTRY, TO THE DEFINITE BENEFIT OF THE ENGINEERS AND PROFESSIONALS OF THIS INDUSTRY, AND TO THE INDIVIDUAL UNIVERSITIES WHO WOULD PARTICIPATE IN THE MUTUAL RECOGNITION OF QUALITY EDUCATION.