Progress Report: STARR Reservoir Characterization Study of the Frio Formation, Umbrella Point Field, Chambers County, Texas

by

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April 1997

QAe7903

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EXECUTIVE SUMMARY

The Bureau of Economic Geology (BEG), The University of Texas at Austin, undertook a reservoir characterization study of the Middle Frio Formation in Umbrella Point field, Galveston Bay, Texas, on behalf of Goldking Production Company, Houston, Texas (the operator). The primary objectives were to integrate geologic and reservoir information available on the field and identify reserve-expansion potential in State Lands.

Umbrella Point field is in a rollover anticline in Middle Frio Formation sandstones, in the footwall of a growth fault underlain by diapiric shale. The reservoir interval consists of stacked distributary-channel, delta-front, shoreface, barrier-island, and shore-parallel bar sandstones, interbedded with shales. The best recoveries have been from zones characterized by uniform channel and barrier-core sandstone deposits, separated by shales.

Cross sections were used to correlate zone tops and collect log facies information. Four 2-D seismic lines were used to map the structural setting of the field, and structure maps were prepared using combined log and seismic data. Log facies were used to interpret gross stratigraphic divisions and depositional environments of the sandstones. Contoured sandstone thickness and reservoir porosity maps were made for each zone. Individual well histories were interpreted from Railroad Commission of Texas and commercial production data. Cumulative production and interpreted drainage area were mapped for each zone. Original hydrocarbons in place were calculated from average field parameters in 40-acre blocks and used to estimate the distribution of remaining mobile hydrocarbons.

Cumulative production from Umbrella Point field through the end of 1995 was 16.8 MMbbl of oil and 100.7 Bcf of gas from 36 wells developed in 18 zones. The current production rate is 320 bopd and 4.3 MMcfgpd from 12 wells with 14 completions. Water is disposed of at a rate of 6,000 bpd. Original hydrocarbons in place at Umbrella Point are calculated volumetrically at 59.7 MMbbl of oil and 299.9 Bcf of gas. Remaining mobile hydrocarbons are estimated at

32.4 MMbbl of oil and 173.3 Bcf of gas. Average recovery efficiency is 28.2 percent for oil and 33.5 percent for gas.

This progress report targets 34 individual 40-acre blocks for infill drilling or recompletions. These targets have from one to eight prospective zones each. Large-scale copies of all reservoir characterization maps and prospect definition plots are supplied with this report. Detailed reservoir analysis by means of an Excel data base (supplied with the report) can be tailored to specific economic and engineering criteria. The BEG remains at Goldking's disposal to identify specific well locations, including working with 3-D seismic data and possibly studying other parts of the Umbrella Point area.

METHODOLOGY

Umbrella Point field was selected for study as a result of hydrocarbon-potential evaluation on State Lands in Texas (Holtz and Garrett, in press). The present study involves the correlation and analysis of well logs from 52 wells in and around the field, in a 16-mi^2 area. Figure 1 is a regional map showing the structural context of Umbrella Point field. Figure 2 is a base map showing well designations. Structure and sandstone-thickness maps were prepared for 15 reservoir zones. Figure 3 is a type log showing the reservoir zones analyzed in this study. Production data were provided by the operator, and additional data were obtained from the Railroad Commission of Texas. Copies of four 2-D seismic lines were supplied by Goldking. Limited reservoir performance and laboratory data were also supplied by the operator, including core-analysis data for most of the producing horizons, produced water analyses, side-wall cores, well-completion history of Goldking's wells, and a two-volume engineering report prepared by W. D. Von Gonten and Co., Inc., in connection with Goldking's original purchase of mineral interests in the field in 1995.

A set of cross sections was constructed by using all of the well logs available to correlate zone tops and collect log facies information. Seismic lines were used to map the structural setting of the field, and structure maps were prepared using combined log and seismic data. Log facies

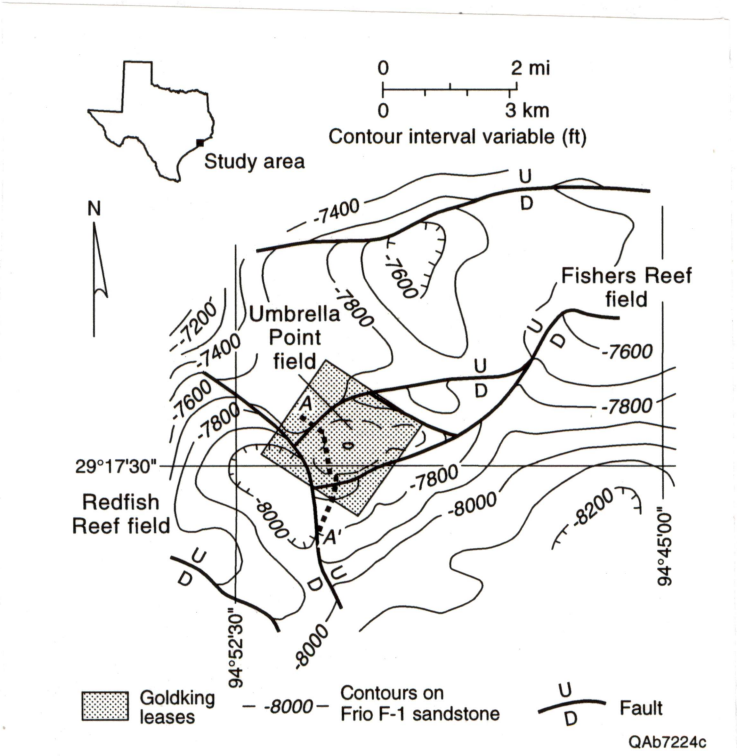

Figure 1. Semiregional structure map contoured on the top of the Frio Formation showing the geologic context of Umbrella Point field. Other similar Frio sandstone fields shown.

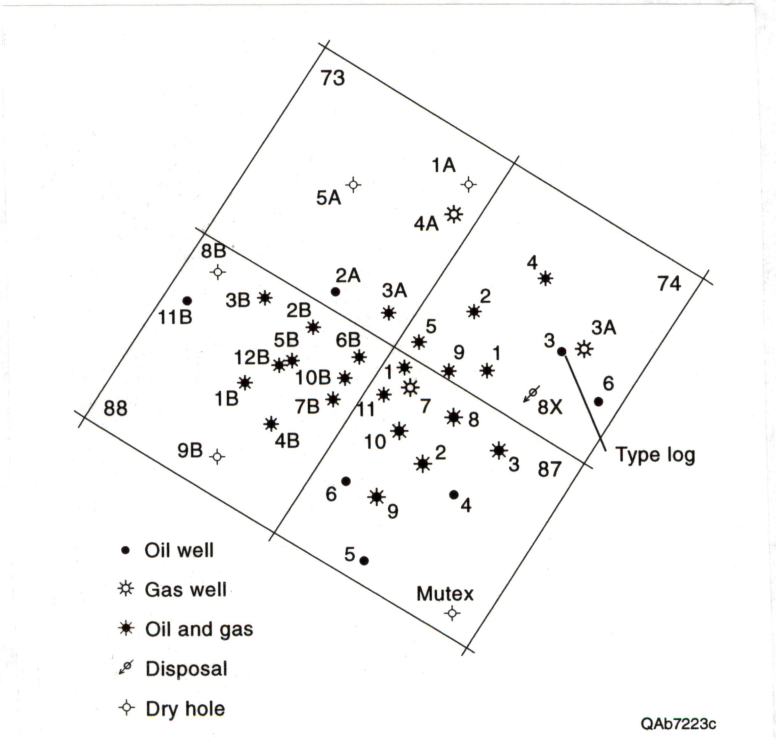

Figure 2. Base map of Umbrella Point field showing well locations and numbers. Type log location indicated.

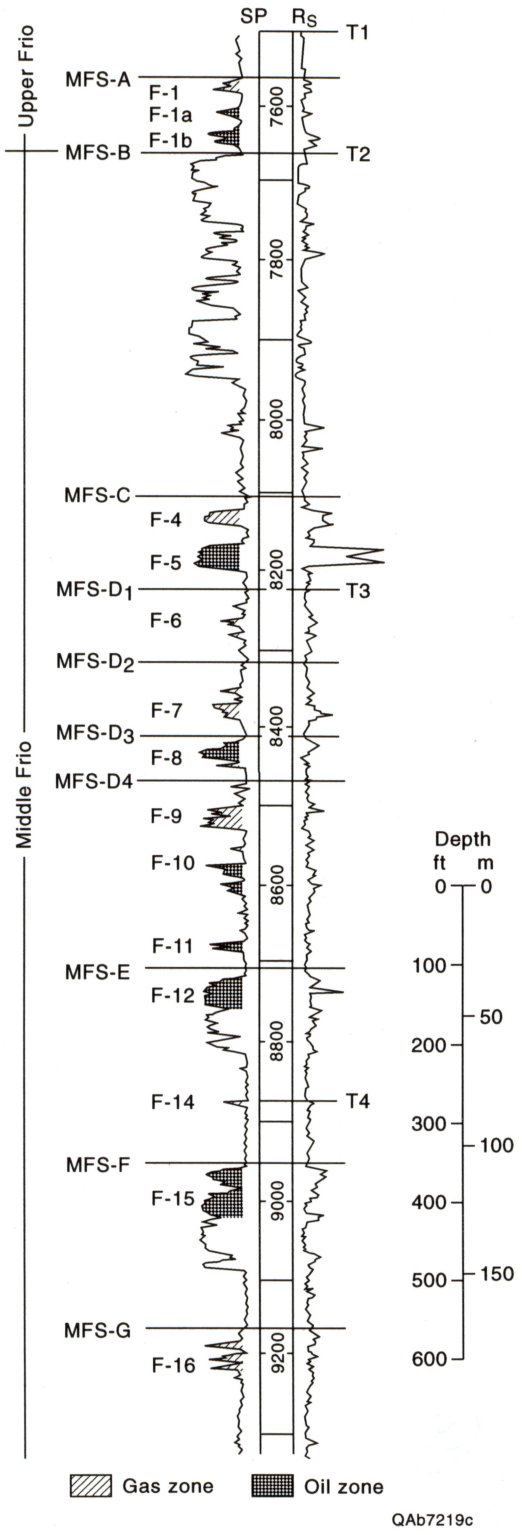

Figure 3. Type log from well 74-3 in Umbrella Point field. SP and shallow resistivity curves shown. MFS horizons correspond to those shown in cross section A–A′. Zone designations indicated for productive interval. Dominant produced fluid type indicated by color.

information was collected for all wells and used to interpret gross stratigraphic divisions and depositional environments of the sandstone zones. Contoured sandstone thickness and zone average reservoir porosity maps were made for each zone. Production data were mapped by zone, showing interpreted drainage areas of oil, gas, and water. Original oil and gas in place were calculated from average field parameters in 40-acre blocks.

All log and well data were collected on Excel spreadsheets. Spreadsheet structure is uniform throughout the data base. Many of the data-processing tasks were performed by interlinking the spreadsheets and merging production, well test, and geologic information together for integrated interpretations.

A key factor and problem in interpretation of production history of Texas oil wells is the allocation of reserves to individual wells on multiwell leases. Operators are only required to submit produced-fluid data for the entire lease. Individual wells are tested periodically to establish their allowable production rates. At Umbrella Point, these tests were taken four to six times per year in the early decades of the field's history. Allowable rates are published monthly in the oil-proration schedule.

Gas wells do not present as difficult a problem as do oil wells. Their fluid production is reported on an individual-well basis. The gas proration schedule, however, does not consistently report test information nor well status.

A set of Excel spreadsheets was prepared to collect and subdivide oil and gas production among actively producing wells, lease by lease and zone by zone. Fluid production from any oil lease is accompanied by a set of potential tests from all active oil wells on the lease. The oil was allocated in accordance with relative proportions of the test production rates of those wells. Because potential tests include gas:oil-ratio (GOR) and water-production rates, the amounts of gas and water associated with produced oil were also calculated. These amounts were recorded as corrected yearly production volumes. No water data were available for gas wells.

Finally a set of Excel spreadsheets was assembled to calculate reservoir volumetric hydrocarbons in place and remaining mobile hydrocarbons for 40-acre blocks across the field. These were used to identify and substantiate prospective areas.

GEOLOGIC SETTING

The Upper Oligocene to Lower Miocene Frio Formation is divided into three operational units, Upper, Middle, and Lower, by Galloway and others (1982). These were correlated throughout the Gulf Coast region in many studies in the 1980's. The reservoir interval at Umbrella Point includes the entire Middle Frio section. The Upper and Lower Frio Formation are predominantly shale in the area, although both contain reservoir sandstones elsewhere. The Frio Formation is overlain by the Lower Miocene Anahuac Shale throughout the Galveston Bay area. The Frio overlies the Lower Oligocene Vicksburg Formation, another sandstone-shale sequence.

The Frio Formation in the Umbrella Point area strikes east-northeast. Regional dip at its top is southeastward at 250 ft/mi, or 2.7°. Figure 1 shows regional structure contoured at the top of the reservoir interval. Gross thickness of the Frio Formation is about 6,000 ft at Umbrella Point, but it increases gulfward from 4,000 to 8,000 ft across Galveston Bay. Regionally the structure is complicated by large-scale growth faults, salt tectonics, and lateral migration of geopressured shale. Three major fault zones intersect the Frio Formation in the Bay area: (1) the Vicksburg flexure beneath the north-shore area, (2) the mid-Frio flexure through central Galveston Bay, and (3) the Upper Frio flexure at the coastline (Gordon, 1982). All three of these produce thickening in the gross section. Most growth is in the lower part of the section. Seismic reflectors in the Anahuac Shale and the Upper Frio Formation show only slight drape over the deeper growth structures, although the largest faults extend far into the Miocene above. Local structure is enhanced by shale diapirism. No salt domes have been found near Umbrella Point, although some occur within the Galveston Bay area.

At Umbrella Point field, the principal trapping mechanism is a rollover anticline on the downthrown side of a smaller growth fault, which defines the northern limit of the hydrocarbon

accumulation (Galloway and others, 1982; Tyler and Ambrose, 1985). Another subparallel growth fault defines the southern limit. Figure 4 shows a dip-normal structural cross section of the productive structure. Some production has been obtained from the upthrown side of the northern boundary fault, which is considered a separate trap called Umbrella Point North field in Railroad Commission of Texas records. Some hydrocarbons have been found on the downthrown side of the southern boundary fault as well. These generally occur deeper in the section. Gas accumulations produce marked direct hydrocarbon indicators on seismic data in the trap area.

The Umbrella Point field boundary faults are of modest size. Maximum vertical displacement of the northern boundary fault is about 200 ft. The synthetic southern boundary fault has a displacement of about 100 ft. Most growth on these faults took place before deposition of all Frio Formation reservoir sandstone zones, and displacements deeper in the section appear much greater on the seismic sections. According to 2-D seismic data, all displacement on these faults appears to die out below the top of the Anahuac Shale, immediately above the Frio Formation. Well log cross sections suggest that a small amount of displacement (20 to 30 ft) extends into the overlying beds. Numerous small synthetic and antithetic faults cut into the Anahuac Shale. These small faults can be traced between wells in some cases, and they commonly have displacements of 30 ft or less.

STRATIGRAPHY

The sandstone zones of the Frio Formation at Umbrella Point are easily correlated across the field. Some channel or slump scouring can be seen on cross sections, and some zones shale out in parts of the field area. Zone tops were chosen generally at the bases of shales but not as the tops of sandstone bodies.

Galloway (1989) described sandstone-shale "genetic sequences" bounded by marine flooding surfaces (MFS) in Tertiary deposits of the northern Gulf of Mexico area. These sequences are composed of smaller scale sand-shale depositional cycles. At Umbrella Point, zones are generally composed of one or more of these small-scale cycles. Commonly an MFS (generally recognized as a local maximum SP deflection) occurs near the base of a thicker, more widely correlatable shale

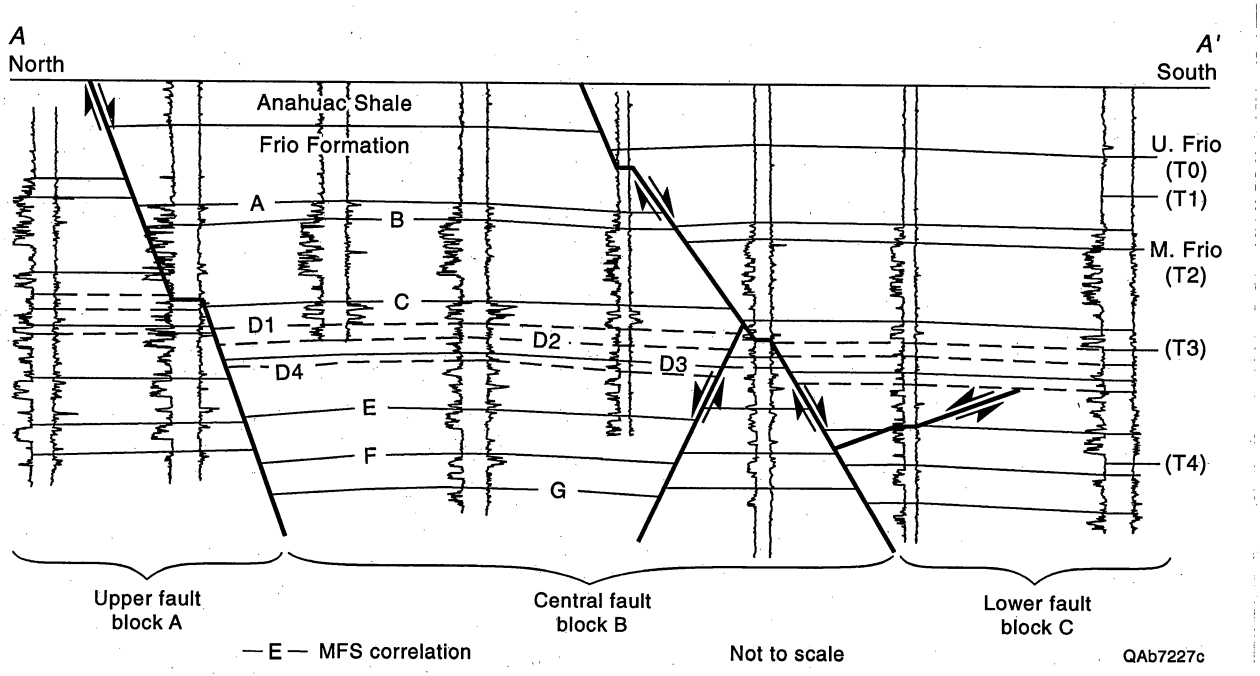

Figure 4. Dip-normal cross section of Umbrella Point field. Line of section shown in figure 1. MFS correlations marked by letter. High-frequency cycles indicated by designations D1, D2, D3, and D4.

interval. Shales separate most zones, but not all of them are interpreted to contain an MFS. Figures 3 and 4 show the MFS mapped in the Umbrella Point area. Four higher order cycles have been named in MFS-D, and they are shown on the cross section (fig. 4) as dashed horizons.

RESERVOIR DESCRIPTION

The Frio Formation is geopressured at depth, but the reservoirs at Umbrella Point are not. Below 11,000 ft, wells encounter geopressured shale throughout the area. Drilling practices for deeper wells place casing seats between a 10,000- and 10,500-ft depth, at the transition to excessive pressures. Drilling mud weights of as much as 17 ppg are used for deeper wells.

Well log facies were determined from the SP log curve for each zone and recorded on an Excel spreadsheet. Maps were constructed of the distribution of facies codes for all reservoir zones. These were used as guides for sandstone thickness contouring.

Generally, upward-coarsening packages are interpreted to be progradational shoreface and delta-front units. Stacked blocky sandstone packages are interpreted to be barrier-island deposits. Both types were contoured as shore-parallel bodies. Upward-fining packages are interpreted to be channel deposits (contoured shore-normal), transgressive inner-shelf sandstones (contoured sheetlike), or local slump deposits, depending on their areal distribution. Thin sandstones encased in thicker shales are interpreted to be storm deposits, contoured as shore-parallel bodies. Upward-fining tops of many sandstone zones are interpreted to have been caused by reworking during small-scale marine transgression in the higher frequency depositional cycles.

Log facies types at Umbrella Point indicate dominantly deltaic and barrier-island depositional environments, consisting of distributary-channel systems, barrier cores, and inner-shelf marine deposits. Upper zones appear to have the most fluvial influence. The sandstone-richest zones (F-2, F-3, F-12, and F-15) show channel-base scour on the order of 20 to 60 ft. They possess the blockiest log character and are interpreted to be aggraded barrier cores complicated by distributary channels and wave-dominated delta deposits. Zones F-4, F-5, and F-9 show the typical SP log character of distributary-channel sandstone deposits. Zones F-6, F-7, F-10, and F-16 show

progradational log character, representing shoreface and frontal splay deposits. Zones F-11 and F-14 are interpreted to be storm deposits.

LOG INTERPRETATION

Most Umbrella Point wells have only old electric survey logs. A few wells have short sections of contact resistivity log data, and only two wells have modern porosity log suites.

The SP log was used to identify reservoir sandstone. It is readily apparent that the amount of SP deflection from the shale baseline varies considerably from the top of the productive interval to its base. The variation in salinity of produced water corresponds with an expected reduction in SP character. The logs were interpreted by marking a shale baseline and maximum deflection line, both of which change with depth. Relative SP values indicate the position of the SP curve, with respect to these lines, with zero at the shale baseline and one at the maximum deflection line. Values recorded on the Excel spreadsheet represent the quality of the sandstone within the zone. The relative measure indicates the degree of purity, and it is used in transforms to estimate reservoir permeability and porosity from logs. Amount of reservoir sandstone was estimated from the footage of relative SP that exceeds 0.25.

The SP curve is sensitive to layer thickness of less than 10 ft. To aid in characterizing the SP quality in each sandstone zone, measures of thickness of the thickest sandstone layer and total number of separate sandstone layers in the zone are recorded in the Excel spreadsheet. A sandstone is considered divided into separate layers when a point in it falls below a relative SP value of 0.5.

The reservoir quality (porosity) of a sandstone zone is assumed related to its relative SP value and the layered nature of the sandstone. Relative quality of the thick sandstones and the average thin sandstones are calculated separately.

FIELDWIDE VOLUMETRICS

Original hydrocarbons in place were estimated for each zone by averaging reservoir parameters in 40-acre blocks across the Umbrella Point structure. Original saturations and water contacts were taken from the engineering study by Von Gonten. The residual oil saturation was assumed equal to 0.15 (Galloway and others, 1982) and the residual gas saturation to 0.05, for estimation of mobile hydrocarbon volumes.

Presence of a gas cap in oil reservoirs was derived by comparing the production GOR to estimated oil solution GOR (920 scf/bbl) and the surface GOR of saturated gas (20,000 scf/bbl). These values were taken from DST data recorded on scout tickets from the earliest wells. Any zone exhibiting an intermediate production GOR was treated as a mixed reservoir with a gas cap. A calculated gas–oil contact was set at a depth necessary to give a ratio of calculated mobile hydrocarbons in place equal to the production GOR of the zone.

Reservoir hydrocarbon volumes were calculated by interpreting porosity from SP log analysis and assuming original hydrocarbon saturation from the water contact upward. Gas-cap volume was calculated separately from oil-leg volume by using the interpreted gas–oil contact to separate them. Oil and gas volume factors were estimated on the basis of API gravity of oil, gas gravity, and temperature according to published correlations (Craft and Hawkins, 1959). Oil and gas recovery factors were calculated by using the volumetric hydrocarbon volumes described above with production volumes by zone. Remaining mobile hydrocarbons in place were estimated by subtracting the produced volumes from calculated mobile original hydrocarbons. Figure 5 shows reservoir volumes of hydrocarbons for the whole field divided into produced, immobile, and remaining fractions. Areas of the circles are proportional to original reservoir volumes of oil and gas.

The first attempt to calculate volumetrics for zone F-15 yielded values unreasonably high in comparison with the other zones. It is thought that the fluid contacts are not well defined in that zone because of internal complexity in the thick sandstone. Some subjectivity is necessary to

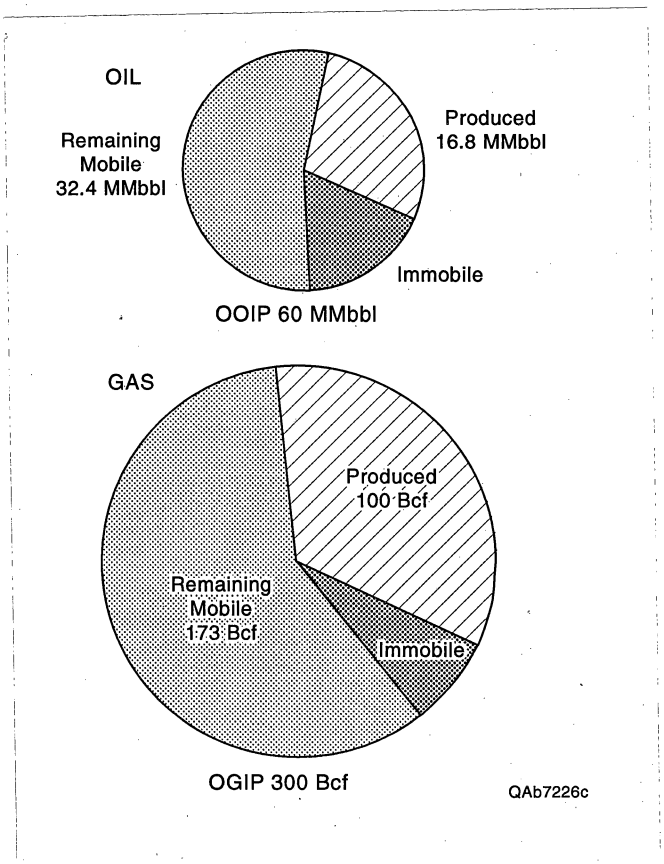

Figure 5. Volumetrics pie chart. Areas of circles proportional to original reservoir volumes of gas and oil.

produce consistent calculations. Consequently, fluid contacts were assigned, which make calculated recovery factors similar to those of the other oil zones (20 percent for oil and 25 percent for gas).

A zone-by-zone summary of produced and reservoir volumes of oil and gas is given in table 1. Zone F-1a stands out instantly as being suspect. The high recovery factors suggest that the calculated reservoir volume is insufficient to accommodate the reported production, which could be due to errors in production reporting during many years of commingling. Initial production, from zone F-5 in 1957, was followed immediately by development of zones F-1a and F-15, which were commingled with F-5 from the beginning. Total volumetric hydrocarbon calculation is probably correct, and total production is probably correct. The calculation of total mobile hydrocarbons is therefore reasonable (assuming initial and residual saturations). Zone F-1a has possibly experienced some recharging from deeper zones.

Mobile hydrocarbons reported in this report are conservative as compared with figures reported to Goldking previously. Because the earlier figures were not constrained by as many geological and reservoir performance criteria, they should be considered optimistic.

DISTRIBUTION OF UNDEREXPLOITED RESERVES

After hydrocarbon-volumetric calculation, distribution of remaining mobile hydrocarbons is found by mapping the calculation blocks that pass prospect criteria. Calculation results are provided as supplementary data for each reservoir zone, and a summary is prepared for all zones together. An area of underexploited reserves is recognized in the lower eastern fault block (Block C), which occupies approximately the southern half of section 87. Because this block does not have a well-developed production history, it should be assigned higher risk as a prospective area.

For example, the remaining mobile hydrocarbons criteria that were used to identify 40-acre target blocks are 50 Mbbl for an oil prospective zone and 1 Bcf for a gas prospective zone. These criteria can easily be changed on the Excel spreadsheet. A block has a possible prospect target in a

Table 1. OOIP, OGIP, and remaining mobile hydrocarbons.

Zone	Type	Production		OOIP	OGIP	RMO	RMG	Recovery factors	
		Mbbl	Bcf	Mbbl	Bcf	Mbbl	Bcf	Oil %OOIP	Gas %OGIP
F-1	gas	263	6.06	640	14.74	338	7.78	41.12	41.12
F-1a	oil	2126	3.89	3041	3.91	272*	.15*	69.92*	78.97*
F-1b	oil	165	0.38	1552	2.55	1061	1.60	10.61	14.84
F-4	gas	938	37.56	1825	73.09	770	30.85	51.39	51.39
F-5	oil	9633	10.16	35258	36.11	19119	19.73	27.32	28.15
F-6	gas	25	1.20	251	11.99	204	9.76	10.03	10.03
F-7	gas	86	5.06	437	25.87	314	18.62	19.70	19.70
F-8	oil	790	5.98	3819	24.02	2448	16.22	20.68	24.89
F-9	gas	149	7.70	392	20.28	219	11.31	37.96	37.96
F-10	oil	504	3.85	2556	16.18	1664	11.11	19.70	23.78
F-11	oil	181	2.65	769	10.04	493	6.63	23.57	26.42
F-12	oil	320	4.01	1211	13.33	734	8.36	26.42	30.08
F-14	gas	77	7.21	209	19.60	120	11.22	36.79	36.97
F-15	oil	1571	5.56	7712	22.37	4761	14.56	20.36	24.85
F-16	gas	13**	2.24**	34	5.82	31	5.39	0.	0.
TOTAL		16830	100.50	59705	299.90	3238	173.30	28.18	33.51

*Values are probably affected by commingling allocation errors and/or charging from deeper zones.
**Production in zone F-16 is from northern fault block A only, not considered in this study.
OOIP = original oil in place; OGIP = original gas in place; RMO = remaining mobile oil; RMG = remaining mobile gas. Production is cumulative through 1995.

single zone if it passes either of the limiting criteria. The number of prospect targets (different zones) in each block is shown in the summary map (fig. 6). Contours are total remaining mobile hydrocarbons as barrels of oil equivalent in all zones per 40-acre block. Gas is converted to oil equivalent at the rate of 6 Mcf = 1 boe.

Potentially prospective blocks were further screened according to percent recovery of original hydrocarbons in place. It is considered excessively risky to drill where a larger fraction of hydrocarbons has been produced. In this example, no more than 20 percent of oil or 30 percent of gas may have been produced from any prospective block. This limitation qualitatively allows for the harmful effects of pressure reduction and gas or water fingering due to overexploitation. This correction has been applied to the blocks described in the prospect summary.

The presence of multiple stacked reservoirs reduces risk. The condition of older well bores has not been considered in identifying these targets; many would need new wells drilled. Actual drilling locations or recompletion opportunities should be selected by picking the best positions in the target 40-acre blocks. More than one drilling location could be available in the blocks that have excessive mobile hydrocarbons. Locations should be chosen on the basis of patterns of porosity, net sandstone thickness, and structural relief. Maps of drainage areas can be used to avoid proximity to other wells that have drained the same zone (interference).

PROSPECT SUMMARY

Thirty-four individual 40-acre blocks pass all prospect criteria. Table 2 is a ranked list of prospective blocks that presents all blocks having at least one target zone. They are ranked in order of the number of targets, then by oil-equivalent of the deepest target (gas expressed as 6 Mcf = 1 boe). Ranking and target volumes should be used along with reservoir maps to develop well locations.

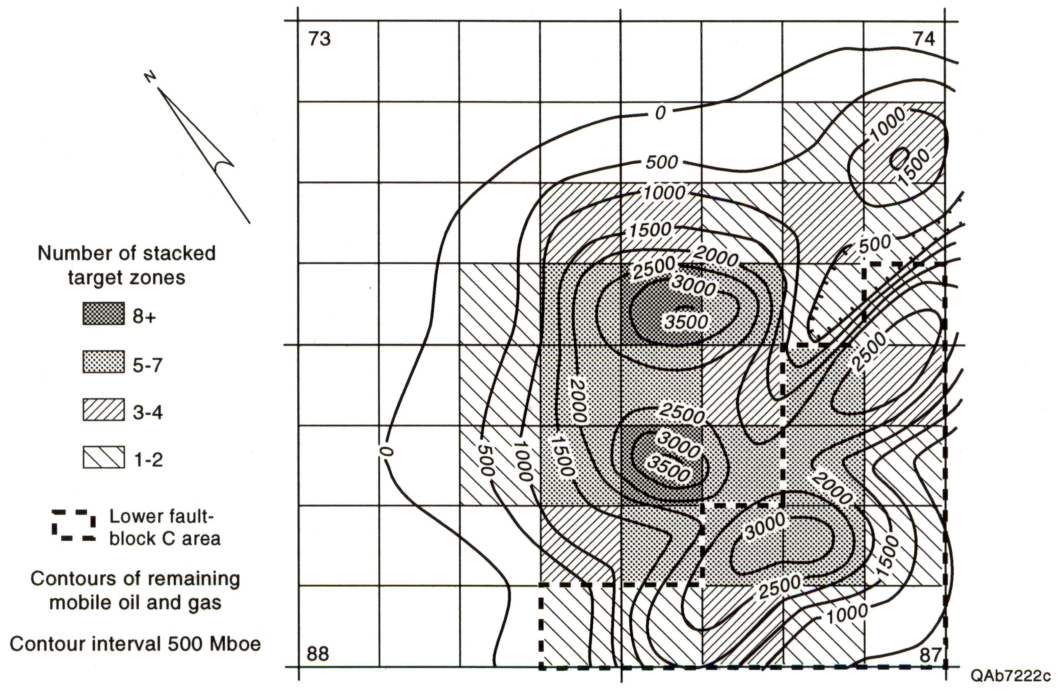

Figure 6. Summary of reserves expansion potential. Contours are of remaining mobile hydrocarbons as Mboe. Patterned blocks indicate distribution of prospect target zones.

Table 2. Ranked list of prospective blocks.

Block number	Total targets	Total Mboe	Deep target	Deep Mboe
74-13	8	2944	F-15	296
87-5	8	3414	F-16	241
74-14	7	2552	F-15	738
87-6	7	1444	F-15	357
87-10	7	2424	F-10	337
87-11	7	2480	F-15	104
87-12	7	1308	F-15	100
88-1	6	1603	F-10	294
73-16	6	1702	F-10	71
87-2	6	1498	F-10	54
87-4	5	1819	F-16	244
88-8	5	1186	F-15	216
87-7	5	1026	F-10	64
87-3	4	1147	F-15	628
87-14	4	1547	F-15	244
74-12	4	1111	F-8	232
74-8	4	1532	F-15	125
73-9	4	1209	F-8	118
88-9	4	704	F-15	81
87-1	3	1446	F-8	197
74-10	3	788	F-8	103
87-13	2	1966	F-5	1723
74-7	2	742	F-5	549
74-11	2	816	F-8	445
87-15	2	460	F-5	268
87-8	2	346	F-5	176
74-9	2	814	F-8	115
73-15	2	338	F-5	112
87-16	1	875	F-5	875
88-7	1	248	F-4	248
88-2	1	175	F-5	175
74-15	1	163	F-5	163
88-16	1	100	F-1a	100
87-9	1	53	F-5	53

CONCLUSIONS

The Umbrella Point study documents unproduced mobile hydrocarbon resources of 32 MMbbl of oil and 173 Bcf of gas remaining in the central and downdropped southern fault blocks of Umbrella Point field (Blocks B and C). These unexploited hydrocarbons indicate past inefficient reservoir development and operation by competing field operators and an absence of previous fieldwide reservoir studies. This study identified 34 individual 40-acre blocks that pass all prospect criteria. They contain from one to eight stacked prospective reservoirs. The presence of multiple stacked reservoirs reduces risk. The condition of older well bores has not been considered in identifying these targets. Locations should be chosen on the basis of patterns of porosity, net sandstone thickness, and structural position. Multiple drilling locations may be possible in blocks having large enough volumes of remaining hydrocarbons.

The analysis in this paper is based on interpretation of average reservoir parameters. Drainage areas are based on plug displacement of hydrocarbons by water, and perfect sweep throughout the reservoir volume. Some prospect-limiting criteria can qualitatively accommodate deviation from the ideal model, but errors may be larger than can be anticipated. A thorough, history-matched reservoir simulation may be needed to better resolve uncertainty, but generally it is impossible in old fields such as Umbrella Point because of a dearth of data and data quality. The methodology described in this paper is meant to be a tool for evaluating the potential of an old field by generating an integrated and consistent geologic, reservoir, volumetric model of the distribution of remaining hydrocarbons.

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Appendix 1. Description of reservoir data provided.

This report includes a large data set in the form of digital Excel files on CD-ROM and hardcopy maps. Zones analyzed include F-1, F-1a, F-1b, F-4, F-5, F-6, F-7, F-8, F-9, F-10, F-11, F-12, F-14, F-15, and F-16. These are the ones referred to as "all zones" in the following lists. The data files on the CD are described below:

Main directory -

diam_gas.xls	interpreted drainage diameter for gas by well and zone
diam_o&g.xls	interpreted drainage diameter for oil and gas by well and zone
diam_wtr.xls	interpreted drainage diameter for water by well and zone
facodes.xls	facies code numbers for sandstone layers
get_Dgas.xls	retrieved gas drainage diameter prepared for plotting on maps
get_Do&g.xls	retrieved oil and gas drainage diameter prepared for plotting on maps
get_Dwtr.xls	retrieved water drainage diameter prepared for plotting on maps
get_SSb.xls	subsea depth of top of producing zones
isopach.xls	zone isopach
kh_graph.xls	graph of permeability transform
meansand.xls	average thickness of thinner sandstone layers
netgross.xls	zone net-to-gross ratio
netpay.xls	amount of sandstone above OWC by zone
netsand.xls	sandstone thickness by zone (from logs)
OWC.xls	OWC subsea depth (interpreted)
porosity.xls	interpreted sandstone porosity from permeability transform (interactive constants)
post_gas.xls	posted gas production
post_oil.xls	posted oil production
post_gas.xls	posted water production
prod_gas.xls	yearly gas production by well and zone (interactive selection of years)
prod_oil.xls	yearly oil production by well and zone (interactive selection of years)
prod_wtr.xls	yearly water production by well and zone (interactive selection of years)
relSP.xls	relative SP deflection in sandstone (from logs)
res_indx.xls	interpreted relative resistivity of sandstones
res_kh.xls	interpreted sandstone kh from sandstone quality transform
resist.xls	highest resistivity of sandstones by zone (from logs)
resv_gas.xls	interpreted reservoir volume of gas by well and zone (interactive constants)
resv_oil.xls	interpreted reservoir volume of oil by well and zone (interactive constants)
resv_wtr.xls	interpreted reservoir volume of water by well and zone (interactive constants)
sandfac.xls	facies codes for thickest sandstone layer character (from logs)
sandlyrs.xls	number of separate sandstone layers within a zone (from logs)
subsea.xls	subsea depth of zone tops
td.xls	total depth of wells
thksand.xls	thickness of thickest sandstone layer in a zone (from logs)
timedep.xls	plot of interval velocity versus depth from sonic logs
tops.xls	drilled depths of zone tops (from logs)

transform.xls	sandstone layer thickness permeability transform
Wellname.xls	original well names from commercial data source
xmitdata.xls	files for preparing production volumes for plotting on maps (interactive)
xmitSSb.xls	files for preparing production depths for plotting on maps (interactive)
zonefac.xls	facies codes for zone character (from logs)

Subdirectories -

Core Data -

74-5data.xls	core analysis data
88-5data.xls	core analysis data

Production Data -

cumprod.xls	1995 cumulative production by zone and tract
Gasdata.xs	yearly gas production by well and zone
GOR.xls	dates of significant changes by well and zone
Oildata.xls	yearly oil production by well and zone
pie.xls	volumetrics pie chart
prod.xls	simple economic analysis of prospects by zone (interactive)
prodwell.xls	volumetric analysis of yearly production data by well and zone (includes original data, well tests, and well status)
summary.xls	summary of production data from different sources
watercut.xls	dates of significant changes by well and zone
wellchrt.xls	template for collecting production data
Wtrdata.xls	yearly water production by well and zone

Volumetrics Data -

prospblks.xls	chart of prospect blocks passing criteria for each zone (interactive)
recovB.xls	charts of recovery factors for fault block B for each zone (interactive)
recovC.xls	charts of recovery factors for fault block C for each zone (interactive)
targetB.xls	charts of remaining mobile hydrocarbons per 40-acre tract in fault block B for each zone (interactive)
targetC.xls	charts of remaining mobile hydrocarbons per 40-acre tract in fault block C for each zone (interactive)
targets.xls	chart of total remaining distribution of Mboe per 40-acre tract and target criteria (interactive)
vol.xls	volumetric analysis by 40-acre tract for each zone (interactive)
volsum.xls	summary of volumetrics for all zones

Well Data -

pres.xls	plots of pressure test data by zone
salt.xls	plot of produced water salinity

Appendix 2. Description of Maps Provided.

The suite of field-scale full size maps is described below. These are approximately 30 × 30 inches in size and presented at a scale of 1:12,000. The geologic maps are work maps that are not in final form. All listed maps are attachments to this report.

FIELD MAPS

- Geologic maps of all zones:
  - Subsea structure, based on well logs and 2-D seismic data
  - Net sandstone thickness
  - Interpreted reservoir porosity
- Computer-generated maps:
  - Well-location base map
  - Interpreted production-drainage area for each zone

The suite of prospect-scale single-page maps is described below and composes Appendix 3. These are not presented as a map projection but are Excel data files configured to approximate the four Goldking lease blocks, subdivided into 40-acre parts. The data presented represent evaluation of the individual 40-acre blocks.

PROSPECT MAPS

- Composite target blocks:
  - Block definitions
  - Number of targets per block (all zones together)
  - Composite oil equivalent per block (all zones together)
  - Volumes of prospective blocks only (all zones together)
  - Ranking of prospective blocks for all zones
  - Total remaining mobile hydrocarbons in fault block B
  - Total remaining mobile hydrocarbons in fault block C
- Target blocks in each zone:
  - Remaining mobile hydrocarbons in zone in fault block B
  - Remaining mobile hydrocarbons in zone in fault block C
  - Percent recovery from zone in fault block B
  - Percent recovery from zone in fault block C
  - Blocks passing prospect criteria
  - F-4, F-5, and F-15 blocks passing special restrictive criteria

Appendix 3. Prospect-scale maps.

Analysis Block Definition Chart

73 4	**73** 3	**73** 2	**73** 1	**74** 4	**74** 3	**74** 2	**74** 1
73 5	**73** 6	**73** 7	**73** 8	**74** 5	**74** 6	**74** 7	**74** 8
73 12	**73** 11	**73** 10	**73** 9	**74** 12	**74** 11	**74** 10	**74** 9
73 13	**73** 14	**73** 15	**73** 16	**74** 13	**74** 14	**74** 15	**74** 16
88 4	**88** 3	**88** 2	**88** 1	**87** 4	**87** 3	**87** 2	**87** 1
88 5	**88** 6	**88** 7	**88** 8	**87** 5	**87** 6	**87** 7	**87** 8
88 12	**88** 11	**88** 10	**88** 9	**87** 12	**87** 11	**87** 10	**87** 9
88 13	**88** 14	**88** 15	**88** 16	**87** 13	**87** 14	**87** 15	**87** 16

Number of targets

Italics **indicate most reserves come from lower fault block**

Block 73			Block 73	Block 74			Block 74
0	0	0	0	0	0	0	0
0	0	0	0	0	0	2	4
0	0	0	4	4	2	3	2
0	0	2	6	8	7	1	*1*
0	0	1	6	5	4	*6*	*3*
0	0	1	5	8	7	*5*	*2*
0	0	0	4	7	7	7	*1*
0	0	0	*1*	*3*	*4*	*2*	*0*
Block 88			Block 88	Block 87			Block 87

Number of Targets

MB Oil Equivalent

***Italics* indicate most reserves come from lower fault block**

BOE fac

0.166667

BCF to MMB

Block 73			Block 73	Block 74			Block 74
0	0	0	0	0	0	1	10
0	0	0	1	172	86	855	1981
0	0	57	1650	1712	1311	955	1213
0	0	395	2231	3657	3147	381	*1172*
0	24	605	2350	2529	2121	*2130*	*1880*
0	90	583	1752	3967	2364	*1777*	*398*
0	0	11	1266	1712	*3080*	*3240*	*246*
0	0	2	*197*	*2552*	*2336*	*688*	*51*

Block 88			Block 88	Block 87			Block 87

Volumes of Prospective Blocks

Number of targets
Gas, MMCF
Oil, MBO
total, MBOE

						2 1156 549 **742**	**4** 1258 1322 **1532**
			4 1806 908 **1209**	**4** 1123 924 **1111**	**2** 1058 640 **816**	**3** 1302 571 **788**	**2** 0 814 **814**
		2 1357 112 **338**	**6** 5294 820 **1702**	**8** 6595 1845 **2944**	**7** 10125 864 **2552**	**1** 0 163 **163**	**1** 0 875 **875**
		1 0 175 **175**	**6** 2900 1120 **1603**	**5** 5431 914 **1819**	**4** 3783 516 **1147**	**6** 4126 810 **1498**	**3** 1269 1234 **1446**
		1 1485 0 **248**	**5** 4179 489 **1186**	**8** 10875 1601 **3414**	**7** 4511 692 **1444**	**5** 2042 686 **1026**	**2** 1017 176 **346**
			4 1809 402 **704**	**7** 4318 588 **1308**	**7** 5789 1515 **2480**	**7** 5007 1589 **2424**	**1** 0 53 **53**
			1 0 100 **100**	**2** 3153 1440 **1966**	**4** 1553 1288 **1547**	**2** 1149 268 **460**	

Ranking of Prospective Blocks

Number of targets
Total potential MBOE
Deepest target
MBOE of deep target

						2 742 F-5 549	**4** 1532 F-15 125
			4 1209 F-8 118	**4** 1111 F-8 232	**2** 816 F-8 445	**3** 788 F-8 103	**2** 814 F-8 115
		2 338 F-5 112	**6** 1702 F-10 71	**8** 2944 F-15 296	**7** 2552 F-15 738	**1** 163 F-5 163	**1** 875 F-5 875
		1 175 F-5 175	**6** 1603 F-15 294	**5** 1819 F-16 244	**4** 1147 F-15 628	**6** 1498 F-10 54	**3** 1446 F-8 197
		1 248 F-4 248	**5** 1186 F-15 216	**8** 3414 F-16 241	**7** 1444 F-15 357	**5** 1026 F-10 64	**2** 346 F-5 176
			4 704 F-15 81	**7** 1308 F-15 100	**7** 2480 F-15 104	**7** 2424 F-15 337	**1** 53 F-5 53
			1 100 F-1a 100	**2** 1966 F-5 1723	**4** 1547 F-15 244	**2** 460 F-5 268	

Block B Prospects

Zone: SUM

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	3 0	14 7
0 0	0 0	0 0	6 0	895 23	450 11	1661 578	3334 1426
0 0	0 0	296 7	3924 996	4039 1039	3430 739	2082 608	2205 846
0 0	1 0	1491 146	7791 933	9921 2004	12533 1058	1058 205	0 0
Block 88			Block 88	Block 87			Block 87
0 0	89 9	2151 247	7024 1179	8985 1031	8318 735	239 5	0 0
0 0	314 38	3088 68	7170 557	13099 1784	9111 715	1584 104	0 0
0 0	0 0	62 1	4674 487	5918 625	4660 349	0 0	0 0
0 0	0 0	3 1	251 6	393 4	0 0	0 0	0 0

Block C Prospects

Zone: SUM

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	1618 903
Block 88							Block 87
0 0	0 0	0 0	0 0	0 0	0 0	6945 927	3555 1288
0 0	0 0	0 0	0 0	0 0	200 97	4416 673	1179 202
0 0	0 0	0 0	0 0	157 75	3976 1292	9353 1681	1018 76
0 0	0 0	0 0	259 106	5254 1607	5794 1370	2286 307	264 7
Block 88			Block 88	Block 87			Block 87

Block B Prospects

Zone: F-1

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	30 1	0 0	0 0	19 1
	0 0	0 0	0 0	758 33	1123 49	394 17	0 0	0 0
	0 0	0 0	7 0	1042 45	1392 60	554 24	0 0	0 0
Block 88	0 0	0 0	0 0	148 6	170 7	0 0	0 0	0 0
	0 0	0 0	0 0	15 1	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-1a

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	30 32
	0 0	0 0	0 0	143 155	49 53	11 12	0 0	0 0
	0 0	0 0	0 0	10 0	66 72	58 63	0 0	0 0
Block 88	0 0	0 0	0 0	0 0	2 2	35 38	0 0	0 0
	0 0	0 0	0 0	2 2	27 29	0 0	0 0	0 0
	0 0	0 0	0 0	13 15	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-1b

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	35 38	0 0	0 0	0 0
0 0	0 0	0 0	64 67	137 149	0 0	0 0	0 0
Block 88							Block 87
0 0	0 0	0 0	129 89	130 141	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88			Block 88	Block 87			Block 87

Block B Prospects

Zone: F-4

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	3 0	7 0	
	0 0	0 0	0 0	6 0	865 22	450 11	1155 29	1258 31	
	0 0	0 0	294 7	1806 45	73 2	682 17	1302 33	847 21	
Block 73	0 0	1 0	1357 34	761 19	184 5	1491 37	811 20	0 0	Block 74
Block 88	0 0	82 2	0 0	0 0	0 0	1023 26	1285 32	1269 32	Block 87
	0 0	286 7	1485 37	428 11	1190 30	1092 27	2041 51	1017 25	
	0 0	0 0	0 0	728 18	1501 37	2067 52	2687 67	912 23	
	0 0	0 0	2 0	251 6	1456 36	1553 39	1149 29	264 7	
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-5

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	7 7
	0 0	0 0	0 0	0 0	0 0	0 0	505 549	914 994
	0 0	0 0	0 0	584 635	588 639	341 371	430 468	643 699
Block 73	0 0	0 0	103 112	538 556	1155 1154	0 0	150 163	805 875
Block 88	0 0	7 7	161 175	796 502	348 248	0 0	784 508	954 1037
	0 0	28 30	0 0	0 0	1004 1029	0 0	330 359	162 176
	0 0	0 0	0 0	227 247	192 209	1069 1162	943 1025	49 53
	0 0	0 0	1 1	0 0	1697 1440	873 949	247 268	0 0
Block 88				Block 88	Block 87			Block 87

Block 74 / Block 87

Block B Prospects

Zone: F-6

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	314 7
	0 0	0 0	3 0	372 8	502 11	40 1	80 2	347 7
	0 0	0 0	25 1	226 5	96 2	149 3	0 0	184 4
Block 88	0 0	0 0	396 8	343 7	457 10	403 8	430 9	288 6	Block 87
	0 0	0 0	876 18	412 9	389 8	344 7	140 3	0 0
	0 0	0 0	0 0	578 12	251 5	323 7	260 5	0 0
	0 0	0 0	0 0	0 0	477 10	562 12	20 0	0 0
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-7

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	279 5
0 0	0 0	0 0	154 3	899 15	868 15	174 3	199 3
0 0	0 0	0 0	1733 29	1162 20	1684 28	79 1	130 2
Block 88							Block 87
0 0	0 0	991 17	251 4	724 12	402 7	1578 27	244 4
0 0	0 0	599 10	573 10	794 13	977 16	479 8	0 0
0 0	0 0	62 1	615 10	440 7	1066 18	978 17	0 0
0 0	0 0	0 0	0 0	762 13	826 14	70 1	0 0
Block 88			Block 88	Block 87			Block 87

Block B Prospects
Zone: F-8

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	356 203
0 0	0 0	0 0	108 117	770 232	1058 269	95 103	169 115
0 0	0 0	0 0	2519 126	843 42	929 46	19 20	0 0
Block 88							Block 87
0 0	0 0	447 22	222 11	384 19	638 32	1263 63	537 197
0 0	0 0	0 0	0 0	133 7	718 36	434 138	0 0
0 0	0 0	0 0	586 74	167 157	151 8	125 6	0 0
0 0	0 0	0 0	0 0	336 17	167 8	0 0	0 0
Block 88			Block 88	Block 87			Block 87

Block B Prospects

Zone: F-9

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	751 15	1508 29	1448 28	0 0	0 0
Block 88							Block 87
0 0	0 0	137 3	1486 29	151 3	808 16	74 1	0 0
0 0	0 0	127 2	1668 32	1404 27	223 4	626 12	0 0
0 0	0 0	0 0	34 1	340 7	306 6	1147 22	0 0
0 0	0 0	0 0	0 0	0 0	38 1	0 0	0 0
Block 88			Block 88	Block 87			Block 87

Block B Prospects

Zone: F-10

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	17 19
0 0	0 0	0 0	0 0	0 0	35 38	0 0	0 0
0 0	0 0	0 0	147 71	216 27	1977 205	0 0	0 0
Block 88							Block 87
0 0	0 0	20 22	1414 157	738 37	663 33	198 54	0 0
0 0	0 0	0 0	1472 164	1286 93	686 109	176 64	0 0
0 0	0 0	0 0	9 10	47 51	593 121	201 98	0 0
0 0	0 0	0 0	0 0	0 0	229 95	0 0	0 0
Block 88			Block 88	Block 87			Block 87

Block B Prospects

Zone: F-11

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	30 9
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	647 32	534 27	0 0	0 0
Block 73								Block 74
Block 88	0 0	0 0	0 0	0 0	375 19	846 42	17 3	0 0	Block 87
	0 0	0 0	0 0	1038 52	882 44	1273 64	65 20	0 0
	0 0	0 0	0 0	0 0	70 21	862 76	587 62	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-12

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	1378 114	1850 137	0 0	0 0
Block 88	0 0	0 0	0 0	987 78	1713 119	692 71	0 0	0 0
	0 0	0 0	0 0	532 57	1441 112	638 69	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	146 26	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-14

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	144 2	89 1	0 0	0 0
Block 73								Block 74
Block 88	0 0	0 0	0 0	0 0	75 1	1659 18	222 2	0 0	Block 87
	0 0	0 0	0 0	0 0	1522 16	2146 23	716 8	0 0	
	0 0	0 0	0 0	1809 19	2817 30	1586 17	1173 13	57 1	
	0 0	0 0	0 0	0 0	393 4	856 9	800 9	0 0	
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-15

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	115 125
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	939 296	1675 459	0 0	0 0
Block 88	0 0	0 0	0 0	753 293	2256 406	1100 445	0 0	0 0
	0 0	0 0	0 0	291 216	1581 367	590 357	0 0	0 0
	0 0	0 0	0 0	74 81	92 100	95 103	999 337	0 0
	0 0	0 0	0 0	0 0	0 0	693 244	0 0	0 0
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-16

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	55 0	95 1	0 0	0 0
Block 73							Block 74
Block 88							Block 87
0 0	0 0	0 0	495 3	1462 8	48 0	0 0	0 0
0 0	0 0	0 0	739 4	1447 8	423 2	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88			Block 88	Block 87			Block 87

Block C Prospects
Zone: F-1

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	499 22
Block 88							Block 87
0 0	0 0	0 0	0 0	0 0	0 0	877 38	263 11
0 0	0 0	0 0	0 0	0 0	82 4	924 40	0 0
0 0	0 0	0 0	0 0	91 4	471 20	108 5	0 0
0 0	0 0	0 0	61 3	461 20	0 0	0 0	0 0
Block 88			Block 88	Block 87			Block 87

Block C Prospects

Zone: F-1a

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88			Block 88	Block 87			Block 87
0 0	0 0	0 0	0 0	0 0	0 0	182 185	0 0
0 0	0 0	0 0	0 0	0 0	21 1	68 74	0 0
0 0	0 0	0 0	0 0	66 71	42 46	0 0	0 0
0 0	0 0	0 0	92 100	65 71	0 0	0 0	0 0

Block C Prospects

Zone: F-1b

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 73								Block 74
Block 88	0 0	0 0	0 0	0 0	0 0	0 0	275 9	0 0	Block 87
	0 0	0 0	0 0	0 0	0 0	97 93	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	5 5	0 0	0 0
	0 0	0 0	0 0	106 3	0 0	0 0	0 0	0 0
Block 88				Block 88	Block 87			Block 87

Block C Prospects

Zone: F-4

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88	0 0	0 0	0 0	0 0	0 0	0 0	1285 32	1269 32
	0 0	0 0	0 0	0 0	0 0	0 0	2041 51	1017 25
	0 0	0 0	0 0	0 0	0 0	2067 52	2687 67	912 23
	0 0	0 0	0 0	0 0	1456 36	1553 39	1149 29	264 7
Block 88				Block 88	Block 87			Block 87

Block C Prospects

Zone: F-5

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	805 875
Block 88	0 0	0 0	0 0	0 0	0 0	0 0	784 508	954 1037
	0 0	0 0	0 0	0 0	0 0	0 0	330 359	162 176
	0 0	0 0	0 0	0 0	0 0	1069 1162	943 1025	49 53
	0 0	0 0	0 0	0 0	1697 1440	873 949	247 268	0 0
Block 88				Block 88	Block 87			Block 87

Block C Prospects

Zone: F-6

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	184 4
Block 88							Block 87
0 0	0 0	0 0	0 0	0 0	0 0	430 9	288 6
0 0	0 0	0 0	0 0	0 0	0 0	140 3	0 0
0 0	0 0	0 0	0 0	0 0	323 7	260 5	0 0
0 0	0 0	0 0	0 0	477 10	562 12	20 0	0 0
Block 88			Block 88	Block 87			Block 87

Block C Prospects

Zone: F-7

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	130 2
Block 88							Block 87
0 0	0 0	0 0	0 0	0 0	0 0	1578 27	244 4
0 0	0 0	0 0	0 0	0 0	0 0	479 8	0 0
0 0	0 0	0 0	0 0	0 0	0 0	978 17	0 0
0 0	0 0	0 0	0 0	762 13	826 14	70 1	0 0
Block 88			Block 88	Block 87			Block 87

Block C Prospects

Zone: F-8

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88							Block 87
0 0	0 0	0 0	0 0	0 0	0 0	1263 63	537 197
0 0	0 0	0 0	0 0	0 0	0 0	434 138	0 0
0 0	0 0	0 0	0 0	0 0	0 0	125 6	0 0
0 0	0 0	0 0	0 0	336 17	167 8	0 0	0 0
Block 88			Block 88	Block 87			Block 87

Block C Prospects

Zone: F-9

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 73								Block 74
Block 88	0 0	0 0	0 0	0 0	0 0	0 0	74 1	0 0	Block 87
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	1147 22	0 0
	0 0	0 0	0 0	0 0	0 0	38 1	0 0	0 0
Block 88				Block 88	Block 87			Block 87

Block C Prospects

Zone: F-10

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 73								Block 74
Block 88	0 0	0 0	0 0	0 0	0 0	0 0	198 54	0 0	Block 87
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
	0 0	0 0	0 0	0 0	0 0	0 0	201 98	0 0
	0 0	0 0	0 0	0 0	0 0	229 95	0 0	0 0
Block 88				Block 88	Block 87			Block 87

Block C Prospects

Zone: F-11

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
Block 73								Block 74
Block 88	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	Block 87
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
	0 0	0 0	0 0	0 0	0 0	0 0	587 62	0 0	
	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
Block 88				Block 88	Block 87			Block 87

Block C Prospects

Zone: F-12

Upper number is gas, MMCF

Lower number is oil, MB

Block 73			Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88			Block 88	Block 87			Block 87
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	146 26	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0

Block C Prospects

Zone: F-14

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 73	Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
Block 73								Block 74
Block 88								Block 87
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
0 0	0 0	0 0	0 0	0 0	0 0	1173 13	57 1	
0 0	0 0	0 0	0 0	0 0	856 9	800 9	0 0	
Block 88				Block 88	Block 87			Block 87

Block C Prospects

Zone: F-15

Upper number is gas, MMCF

Lower number is oil, MB

Block 73				Block 74			Block 74
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Block 88							Block 87
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	999 337	0 0
0 0	0 0	0 0	0 0	0 0	693 244	0 0	0 0
Block 88			Block 88	Block 87			Block 87

Block B Prospects
Zone: F-1

Upper number is gas recovery %

Lower number is oil recovery %

Block 73				Block 73	Block 74			Block 74
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	3.8 0.2	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	11.0 1.3	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	65.0 45.0	18.8 3.8	28.2 8.5	21.5 4.9	0.0 0.0	0.0 0.0
Block 88	0.0 0.0	0.0 0.0	93.9 93.9	61.0 39.7	9.6 1.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	93.9 93.9	78.3 65.2	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-1a

Upper number is gas recovery %

Lower number is oil recovery %

				Block 73	Block 74			
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	5.0 19.8	5.3 20.4	1.7 11.6	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	78.6 78.6	88.7 84.7	71.3 35.1	51.1 63.4	0.0 0.0	0.0 0.0
Block 88	0.0 0.0	0.0 0.0	78.6 78.6	88.6 80.0	70.9 74.6	0.1 2.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	78.6 78.6	75.5 77.0	3.5 16.5	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
				Block 88	Block 87			

Block 73 | Block 74 | Block 87

Block B Prospects

Zone: F-1b

Upper number is gas recovery %

Lower number is oil recovery %

Block 73			Block 73	Block 74			Block 74
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	45.9 47.7	0.7 6.7	0.0 0.0	0.0 0.0	0.0 0.0
Block 88			Block 88	Block 87			Block 87
0.0 0.0	0.0 0.0	0.0 0.0	1.6 2.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

Block B Prospects

Zone: F-4

Upper number is gas recovery %

Lower number is oil recovery %

	Block 73			Block 73	Block 74			Block 74
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	90.0 86.5	12.8 1.8	10.5 1.2	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	9.4 0.9	90.8 88.1	65.5 45.9	0.0 0.0	0.0 0.0
	0.0 0.0	9.4 0.9	24.1 6.2	42.1 19.0	87.0 80.9	37.4 15.0	0.0 0.0	0.0 0.0
Block 88	0.0 0.0	29.4 9.2	93.6 93.6	93.6 93.6	93.6 93.6	43.1 19.8	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	46.8 23.4	79.6 67.6	44.0 20.7	24.3 6.3	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	93.6 93.6	60.8 39.5	23.4 5.8	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	56.2 33.7	6.5 0.5	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
Block 88				Block 88	Block 87			Block 87

Oil and Gas Recoveries

Block B Prospects
Zone: F-5

Upper number is gas recovery %

Lower number is oil recovery %

Block 73				Block 73	Block 74			Block 74
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	5.5 21.2	5.9 22.0	10.0 28.5	0.0 0.0
	0.0 0.0	0.0 0.0	26.6 46.6	0.4 2.4	3.9 13.0	81.5 81.5	10.1 28.8	0.0 0.0
Block 88	0.0 0.0	0.0 0.0	58.9 69.3	27.8 36.1	59.7 65.1	81.5 81.5	0.0 0.0	0.0 0.0
	0.0 0.0	13.0 32.6	81.5 81.5	86.1 81.8	10.2 24.4	81.5 81.5	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	81.5 81.5	52.1 65.2	49.6 63.6	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	36.2 54.3	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-6

Upper number is gas recovery %

Lower number is oil recovery %

Block 73 | Block 73 | Block 74 | Block 74

0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	11.9 1.5	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	61.2 41.0	6.4 0.4	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

Left side: Block 73 (above middle line) | Block 88 (below middle line)

Right side: Block 74 (above middle line) | Block 87 (below middle line)

Block 88 | Block 88 | Block 87 | Block 87

Block B Prospects

Zone: F-7

Upper number is gas recovery %

Lower number is oil recovery %

Block 73 (top left) | Block 73 / Block 74 (top middle) | Block 74 (top right)

0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	74.3 60.1	6.4 0.4	65.1 46.2	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

Left side, middle: Block 73 / Block 88 | Right side, middle: Block 74 / Block 87

Block 88 (bottom left) | Block 88 / Block 87 (bottom middle) | Block 87 (bottom right)

Block B Prospects

Zone: F-8

Upper number is gas recovery %

Lower number is oil recovery %

				Block 73	Block 74			
				0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
				0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
				0.0 0.0	0.0 0.0	0.0 0.0	0.8 0.8	0.0 0.0
				0.0 0.0	0.0 0.0	0.0 0.0	34.7 12.8	53.4 30.5
Block 73				0.0 0.0	0.0 0.0	0.0 0.0	2.8 0.1	0.1 3.1
Block 88				0.0 0.0	0.0 0.0	50.0 26.7	82.5 72.6	7.5 0.6
				0.0 0.0	0.0 0.0	90.3 82.6	0.0 0.0	0.0 0.0
				0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	2.2 7.3
				0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
				Block 88	Block 87			

Block 74	
0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0
46.9 23.4	0.0 0.0
0.0 0.0	0.0 0.0
18.1 3.5	0.0 0.0
0.0 0.0	0.0 0.0
Block 87	

Block B Prospects

Zone: F-9

Upper number is gas recovery %

Lower number is oil recovery %

Block 73			Block 73	Block 74			Block 74
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	8.4 0.8	0.0 0.0	0.0 0.0	0.0 0.0
Block 88							Block 87
0.0 0.0	0.0 0.0	0.0 0.0	38.4 15.8	88.1 82.8	13.4 1.9	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	26.3 7.4	6.7 0.5	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
Block 88			Block 88	Block 87			Block 87

Block B Prospects
Zone: F-10

Upper number is gas recovery %

Lower number is oil recovery %

Block 73			Block 73	Block 74			Block 74
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	33.9 27.2	80.6 70.2	7.2 4.0	0.0 0.0	0.0 0.0
Block 88			Block 88	Block 87			Block 87
0.0 0.0	0.0 0.0	0.0 0.0	12.1 7.0	51.6 28.4	29.6 9.3	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	3.1 2.1	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

Block B Prospects

Zone: F-11

Upper number is gas recovery %

Lower number is oil recovery %

Block 73			Block 73	Block 74			Block 74
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	21.7 5.1	0.0 0.0	0.0 0.0	0.0 0.0
Block 88							Block 87
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	51.1 28.1	0.9 0.0	78.8 69.4	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	25.8 7.2	2.8 0.1	2.0 0.0	33.0 32.2	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
Block 88			Block 88	Block 87			Block 87

Oil and Gas Recoveries

Block B Prospects
Zone: F-12

Upper number is gas recovery %

Lower number is oil recovery %

Block 73				Block 73	Block 74			Block 74
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	4.0 1.4	0.0 0.0	0.0 0.0
Block 73								Block 74
Block 88	0.0 0.0	0.0 0.0	0.0 0.0	30.4 17.3	22.9 10.5	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	26.2 17.4	9.8 4.2	3.3 1.9	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
Block 88				Block 88	Block 87			Block 87

Block B Prospects

Zone: F-14

Upper number is gas recovery %

Lower number is oil recovery %

Block 73			Block 73	Block 74			Block 74
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	94.0 94.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	33.2 11.8	0.9 0.0	0.0 0.0	0.0 0.0
Block 88							Block 87
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	75.2 60.2	4.7 0.2	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	9.4 0.9	7.5 0.6	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	5.6 0.3	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
Block 88			Block 88	Block 87			Block 87

Block B Prospects
Zone: F-15

Upper number is gas recovery %

Lower number is oil recovery %

	Block 73			Block 73	Block 74			Block 74
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	2.9 15.3
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
Block 73	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	33.0 25.4	13.8 10.7	0.0 0.0	0.0 0.0
Block 88	0.0 0.0	0.0 0.0	0.0 0.0	30.9 26.4	22.5 18.6	4.5 3.7	80.8 80.8	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	53.6 42.8	18.5 16.4	23.9 16.1	80.8 80.8	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.8 8.0	0.0 0.0	0.0 0.0
	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
	Block 88			Block 88	Block 87			Block 87

Block C Prospects

Zone: F-4

Upper number is gas recovery %

Lower number is oil recovery %

Block 73 | Block 73 | Block 74 | Block 74

0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	28.1 8.4	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

Left side: Block 73 / Block 88 — Right side: Block 74 / Block 87

Block 88 | Block 88 | Block 87 | Block 87

Block C Prospects

Zone: F-5

Upper number is gas recovery %

Lower number is oil recovery %

Block 73 | Block 73 | Block 74 | Block 74 (top edge)

Block 73 / Block 88 (left edge) — Block 74 / Block 87 (right edge)

0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	16.9 15.9	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	2.9 15.4	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	1.6 11.4	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

Block 88 | Block 88 | Block 87 | Block 87 (bottom edge)

Block C Prospects

Zone: F-7

Upper number is gas recovery %

Lower number is oil recovery %

Block 73 (upper left), Block 73 / Block 74 (top center), Block 74 (upper right)

0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	2.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

Block 73 / Block 88 (left middle), Block 74 / Block 87 (right middle)

Block 88 (lower left), Block 88 / Block 87 (bottom center), Block 87 (lower right)

Block C Prospects
Zone: F-11

Upper number is gas recovery %

Lower number is oil recovery %

Block 73 (top left) · Block 73 | Block 74 (top centre) · Block 74 (top right)

0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	1.9 1.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

Left side: Block 73 / Block 88 · Right side: Block 74 / Block 87

Block 88 (bottom left) · Block 88 | Block 87 (bottom centre) · Block 87 (bottom right)

Block C Prospects
Zone: F-15

Upper number is gas recovery %

Lower number is oil recovery %

Block 73 | Block 73 | Block 74 | Block 74 (top edge)

0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	4.9 3.1	0.0 0.0
0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

Left edge: Block 73 / Block 88; right edge: Block 74 / Block 87

Block 88 | Block 88 | Block 87 | Block 87 (bottom edge)

Umbrella Point
Prospective Blocks
Zone: F-1

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

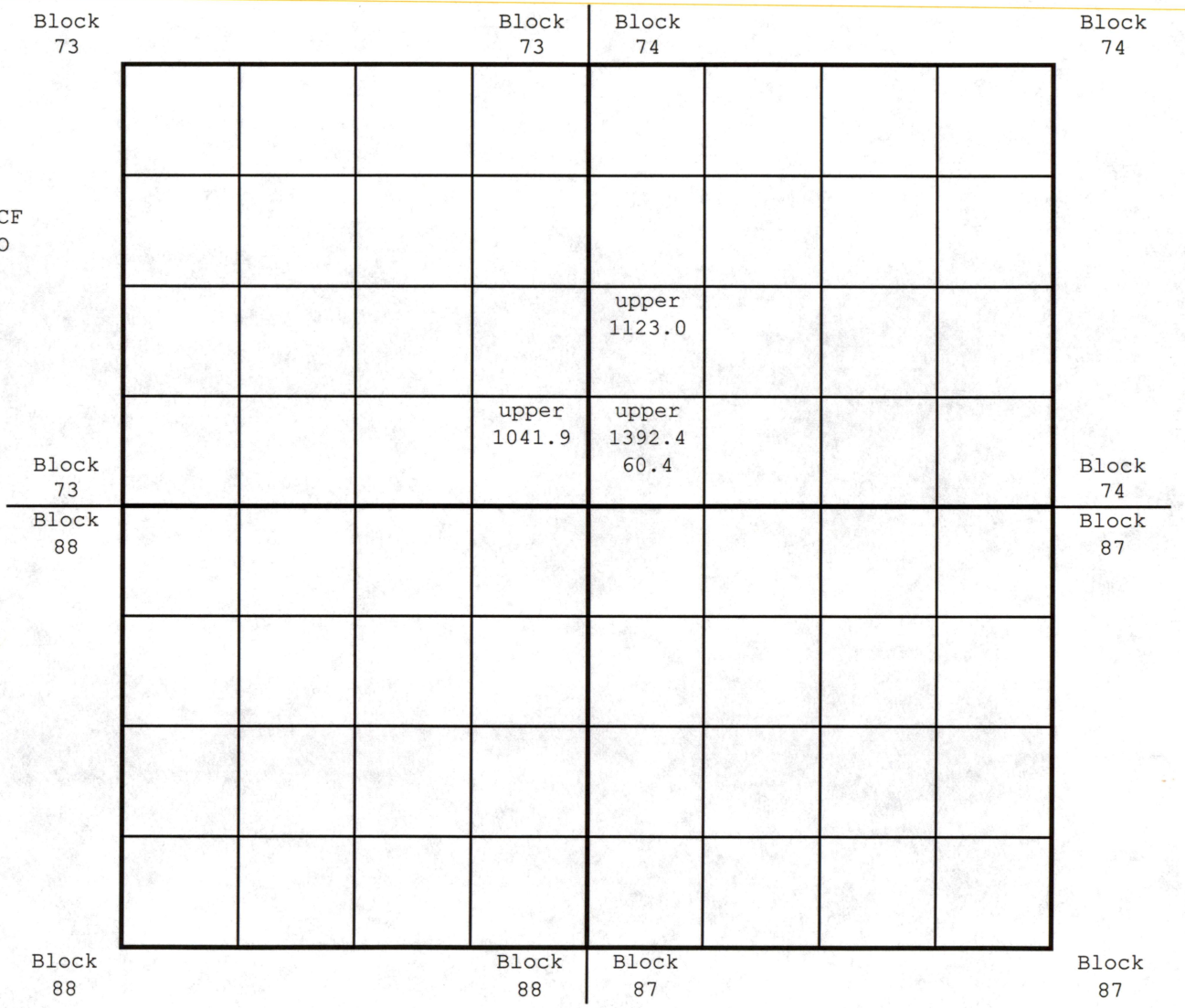
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-1a

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

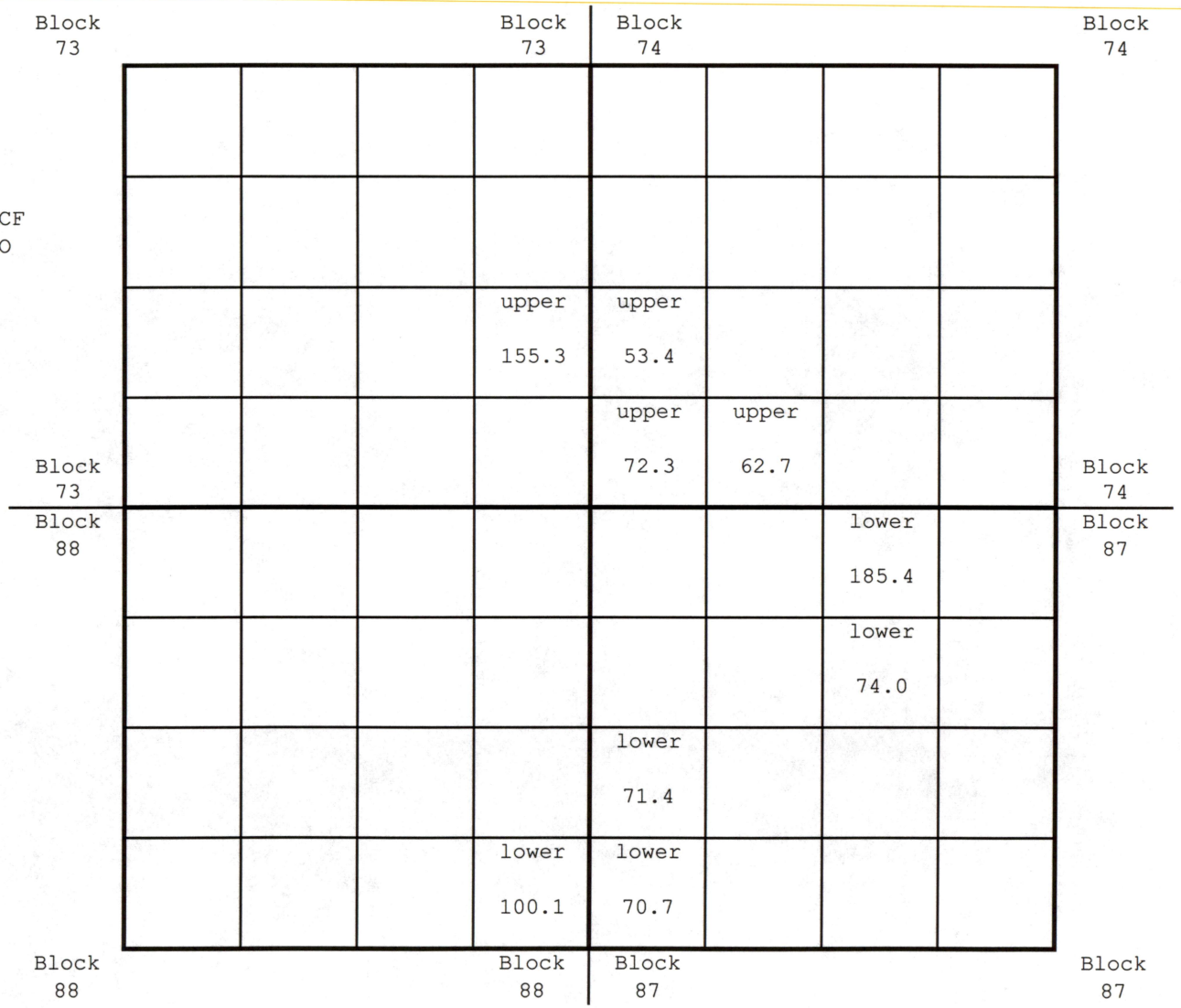
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-1b

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

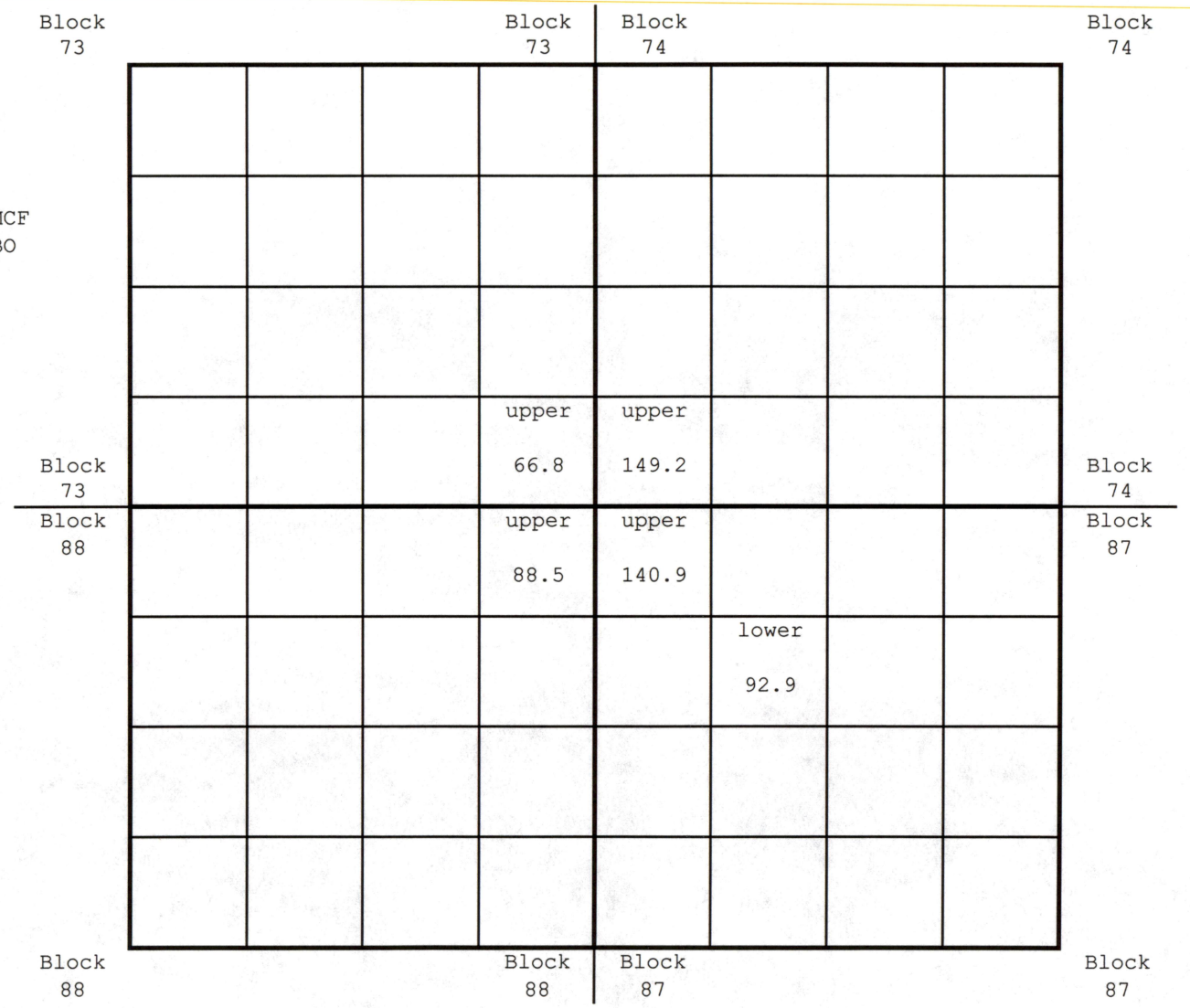
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-4

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *

Block 73			Block 73	Block 74			Block 74
						upper 1155.5	upper 1258.2
			upper 1805.9			upper 1302.4	
		upper 1356.6			upper 1491.3		
Block 88					upper 1022.6	lower 1285.3	lower 1269.1
		upper 1485.1		upper 1190.1	upper 1092.4	lower 2041.5 51.0	lower 1017.4
				upper 1501.0	lower 2066.6 51.6	lower 2686.6 67.1	
				lower 1455.8	lower 1552.5	lower 1148.7	
Block 88			Block 88	Block 87			Block 87

Block 73 / Block 74 / Block 88 / Block 87

* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-5

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *

Block 73 | Block 73 | Block 74 | Block 74

						upper 549.0	upper 993.7
			upper 635.2	upper 639.2	upper 370.9	upper 467.9	upper 698.7
		upper 111.8	upper 555.9	upper 1154.6 1153.8		upper 163.0	lower 874.9
		upper 174.7	upper 501.9	upper 247.7		lower 507.8	lower 1037.4
				upper 1004.3 1029.1		lower 358.7	lower 176.2
			upper 247.0	upper 208.7	lower 1068.7 1161.7	lower 1024.7	lower 52.8
				lower 1696.8 1440.2	lower 948.5	lower 268.4	

Left side: Block 73 (upper half) / Block 88 (lower half). Right side: Block 74 (upper half) / Block 87 (lower half).

Block 88 | Block 88 | Block 87 | Block 87

* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-6

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

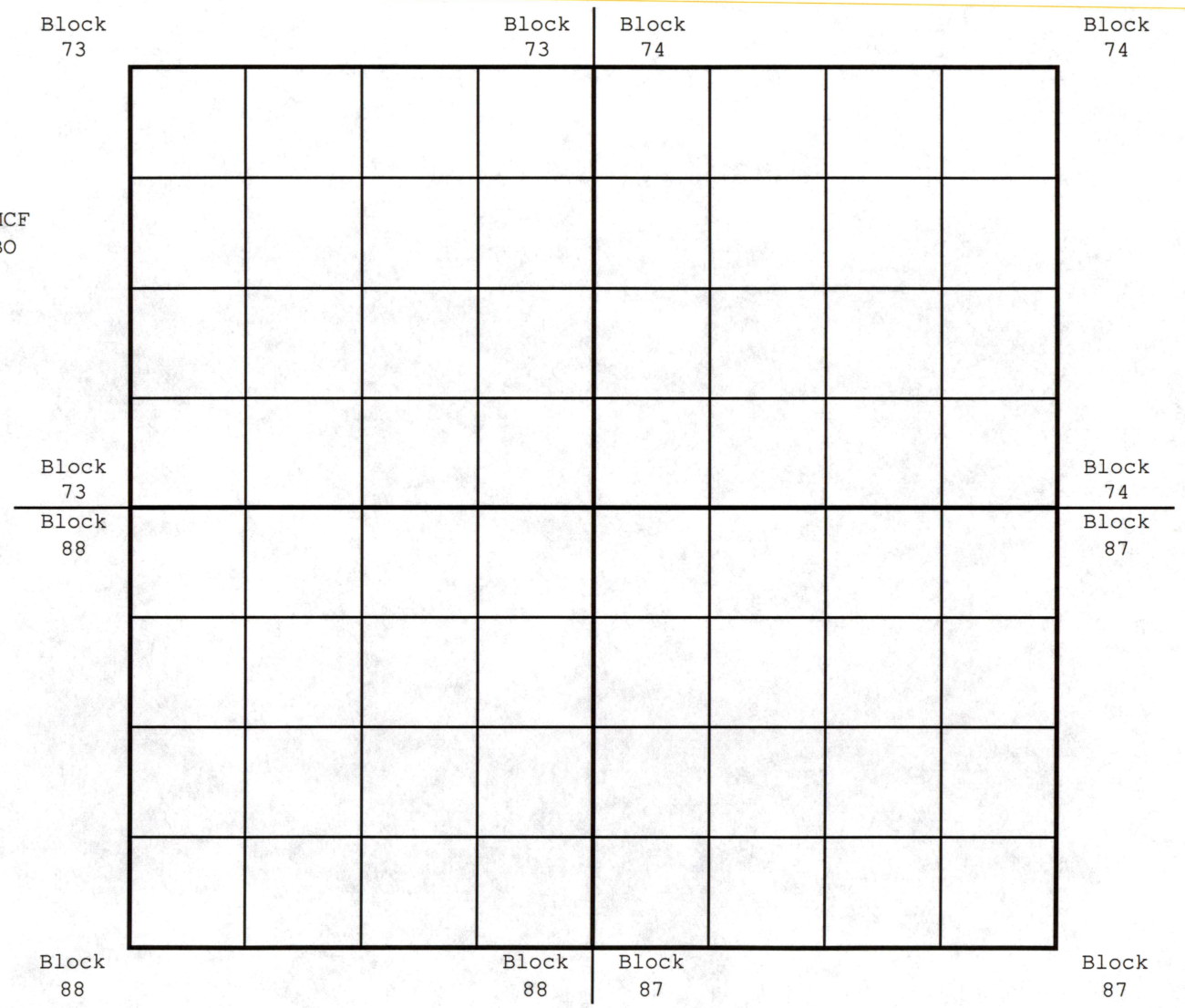
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-7

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

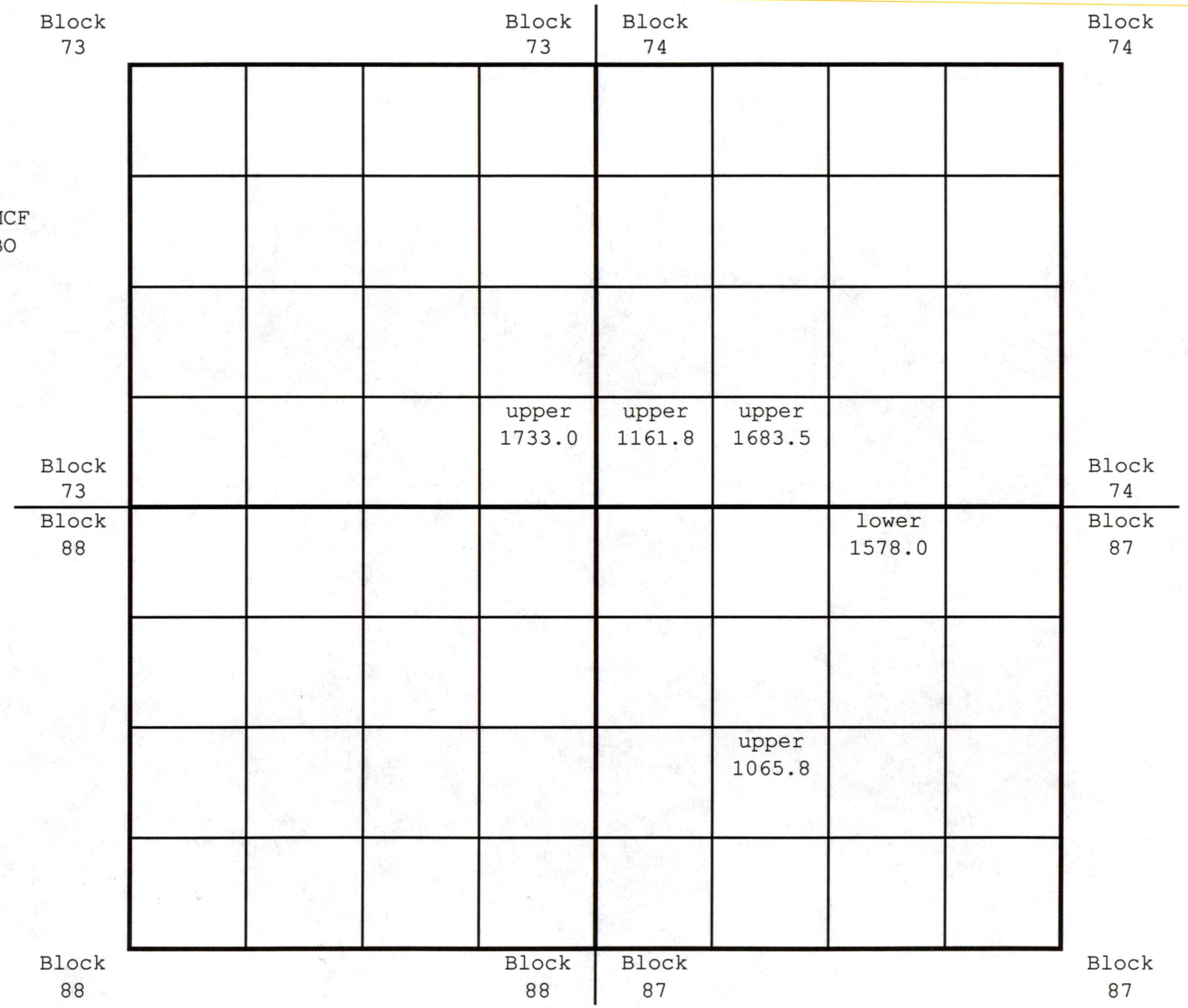
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-8

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *

Block 73			Block 73	Block 74			Block 74
							upper 202.6
			upper 117.5	upper 232.2	upper 1058.0 269.3	upper 103.1	upper 115.2
			upper 2519.1 126.0				
Block 88						lower 1263.0 63.1	lower 196.9
						lower 137.8	
			upper 73.7	upper 157.4			
Block 88			Block 88	Block 87			Block 87

* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-9

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

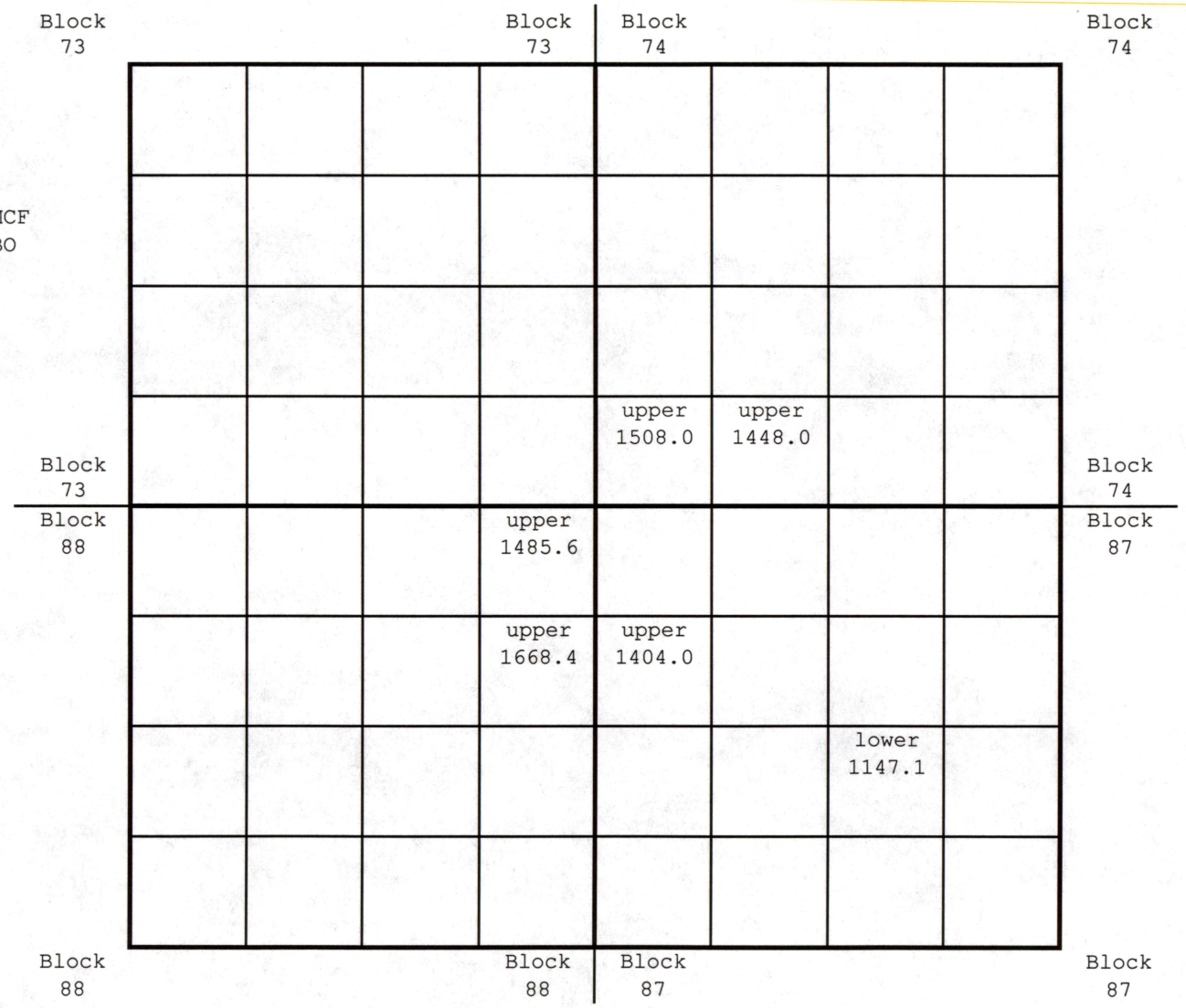
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-10

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

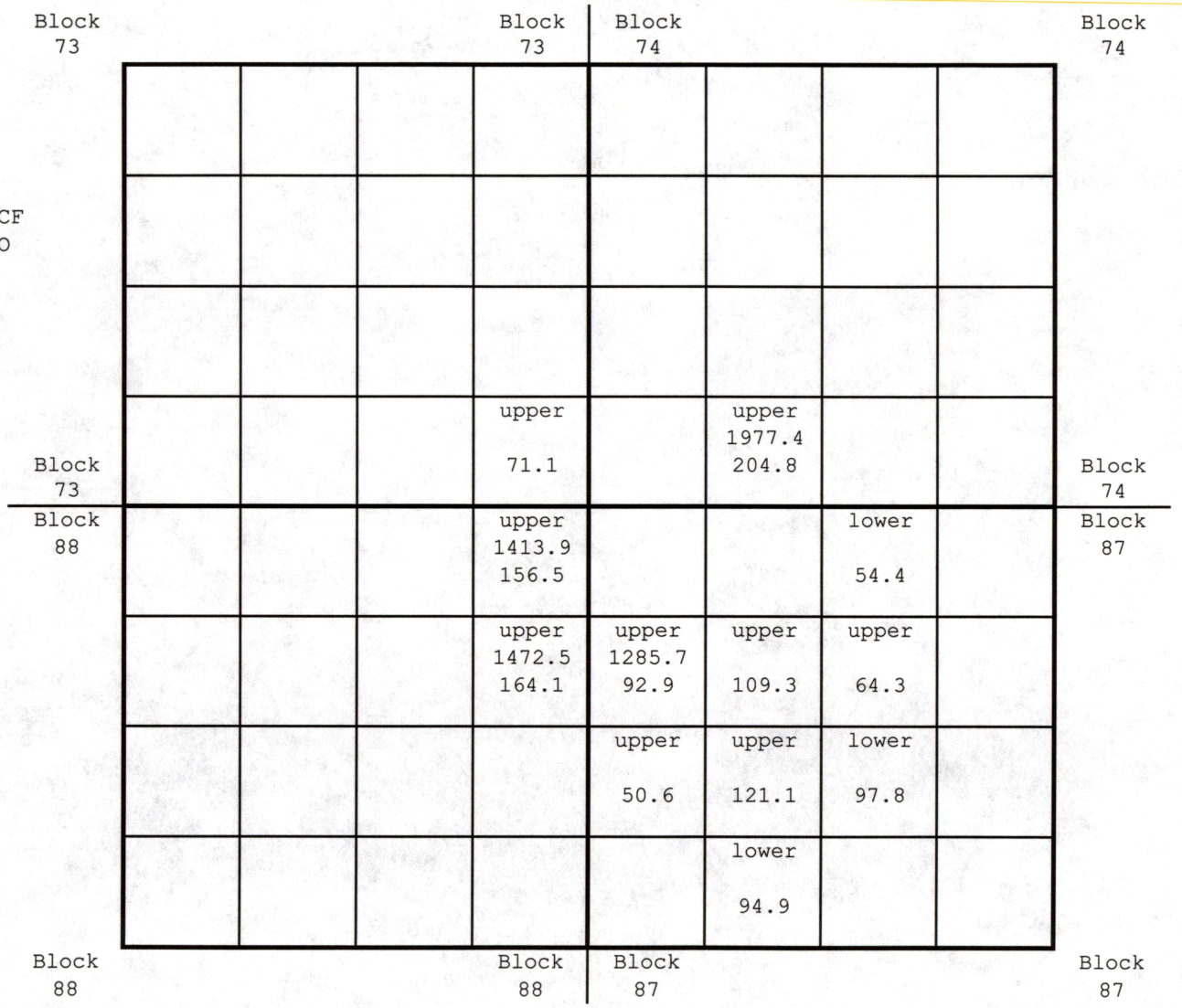
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-11

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

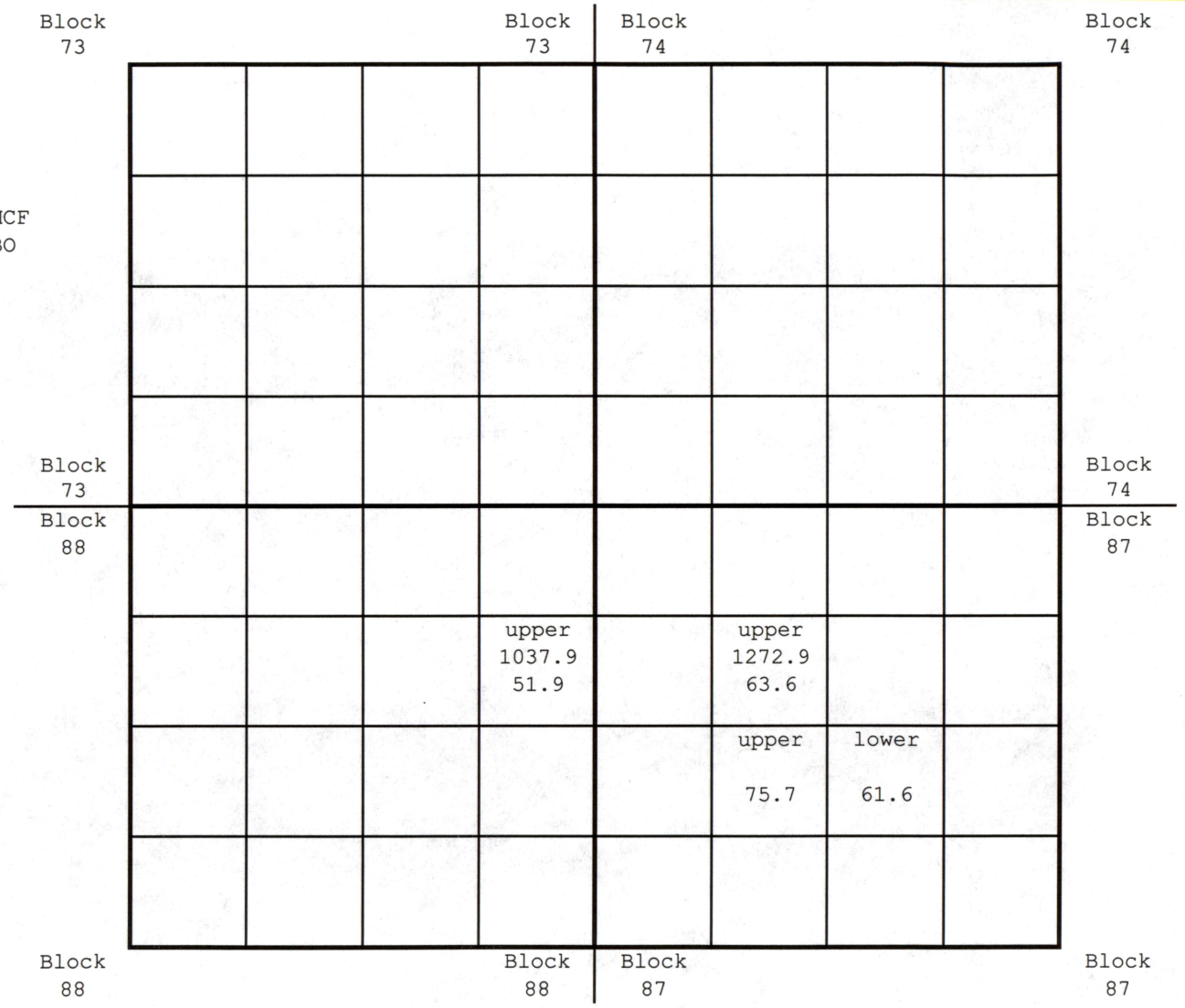
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-12

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

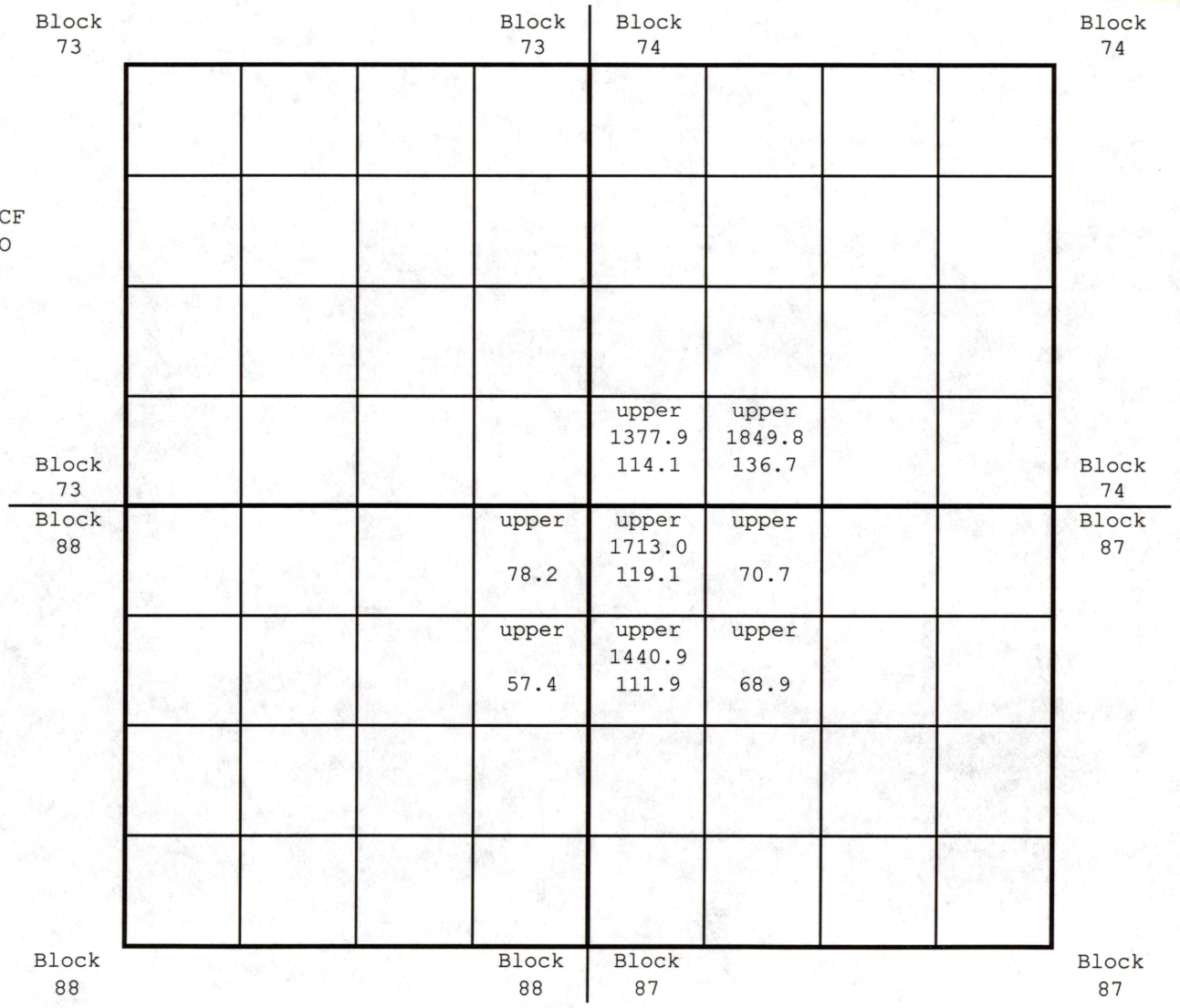
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-14

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

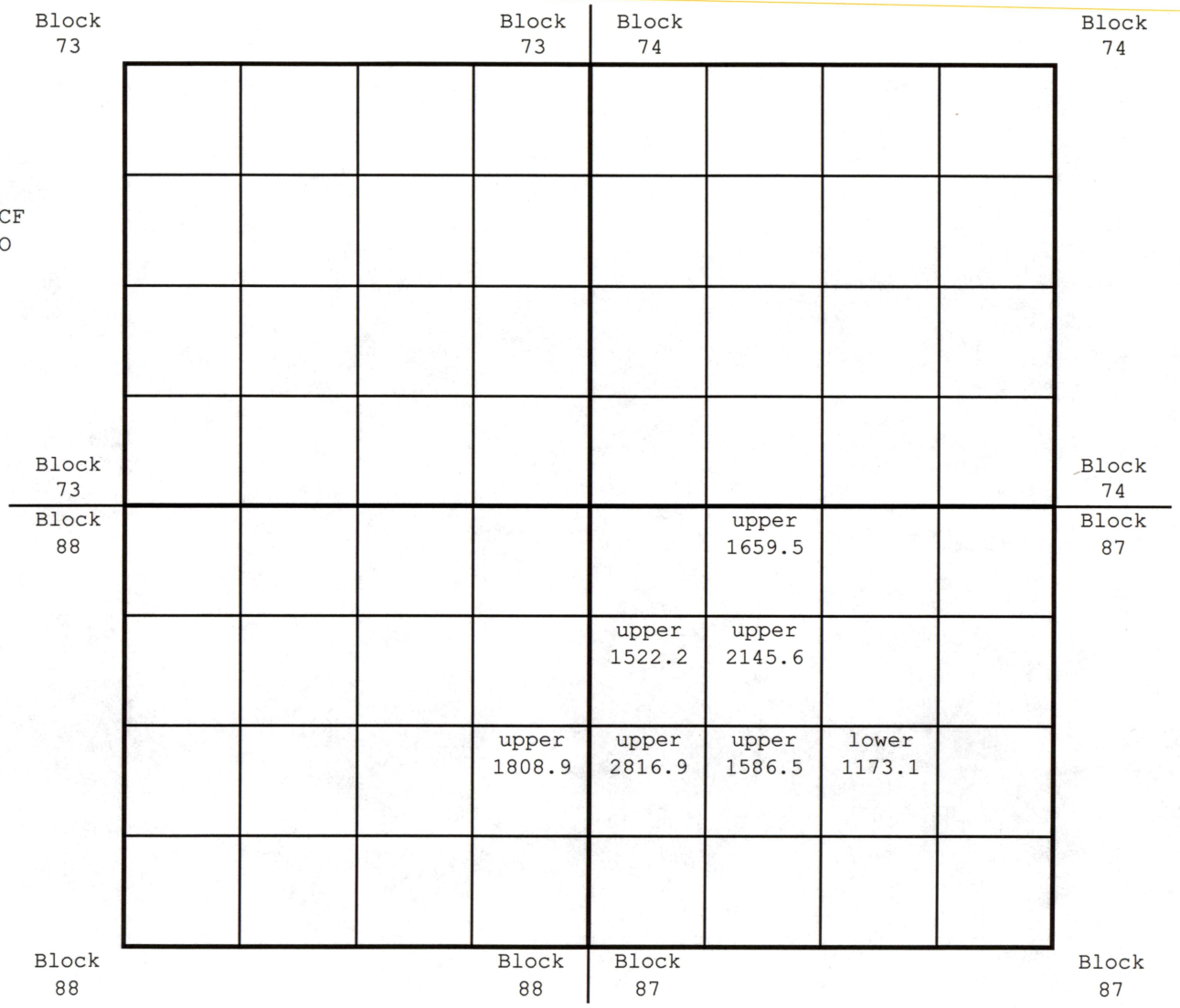
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-15

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *

Block 73			Block 73	Block 74			Block 74
							upper 125.4
				upper 295.6	upper 1674.6 458.7		
Block 88			upper 293.5	upper 2255.6 405.5	upper 1100.3 444.6		Block 87
			upper 215.6	upper 1580.5 367.2	upper 356.9		
			upper 80.8	upper 99.8	upper 103.5	lower 336.7	
					lower 244.2		
Block 88			Block 88	Block 87			Block 87

* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-16

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

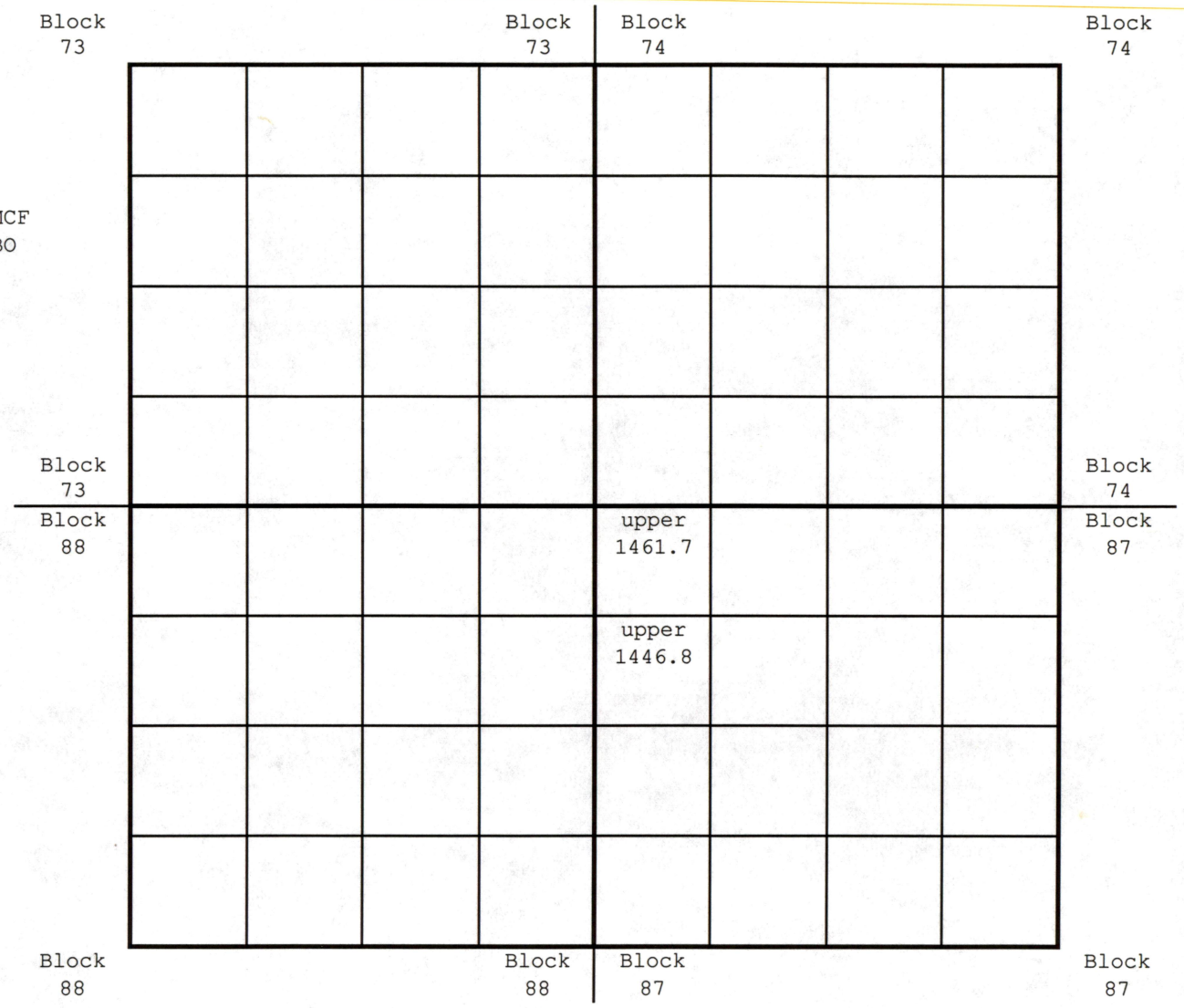
Oil Recovery Limit:
20 % *

Oil Recovery Volume
50 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
100 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-4

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

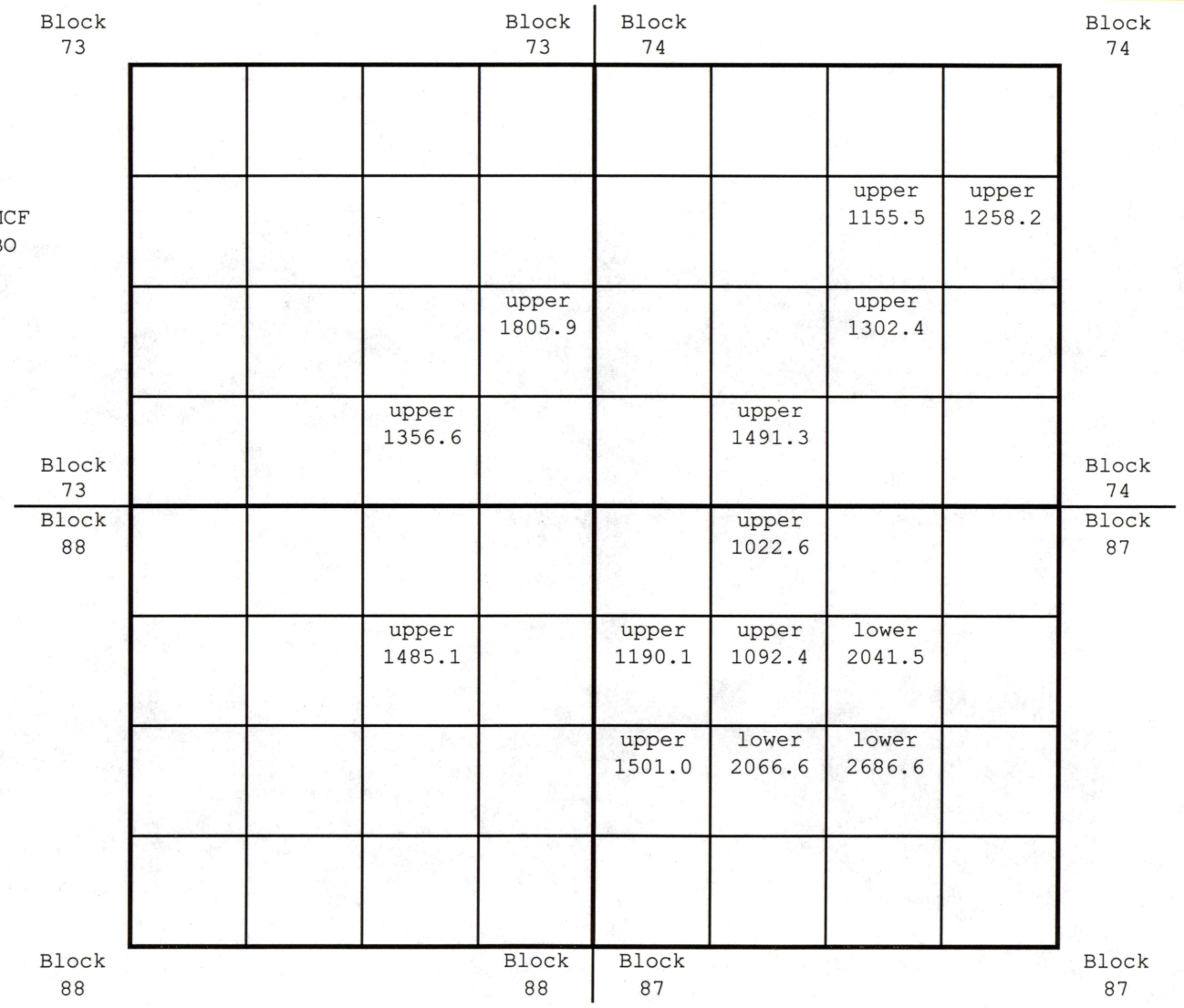
Oil Recovery Limit:
20 % *

Oil Recovery Volume
100 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
50 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-5

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

Oil Recovery Limit:
20 % *

Oil Recovery Volume
100 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
50 % prob. of success *

Block 73 (top left) · Block 73 / Block 74 (top center) · Block 74 (top right)

						upper 549.0	upper 993.7
			upper 635.2	upper 639.2	upper 370.9	upper 467.9	upper 698.7
		upper 111.8	upper 555.9	upper 1154.6 1153.8		upper 163.0	lower 874.9
		upper 174.7	upper 501.9	upper 247.7		lower 507.8	lower 1037.4
				upper 1004.3 1029.1		lower 358.7	
			upper 247.0	upper 208.7	lower 1161.7	lower 1024.7	
				lower 1440.2	lower 948.5	lower 268.4	

Left side: Block 73 (above middle line) / Block 88 (below middle line) · Right side: Block 74 (above middle line) / Block 87 (below middle line)

Block 88 (bottom left) · Block 88 / Block 87 (bottom center) · Block 87 (bottom right)

* See Targets-criteria spreadsheet to adjust prospect size and risk criteria

Umbrella Point
Prospective Blocks
Zone: F-15

Using all criteria

Upper figure is gas prospect in MMCF
Lower figure is oil prospect in MBO

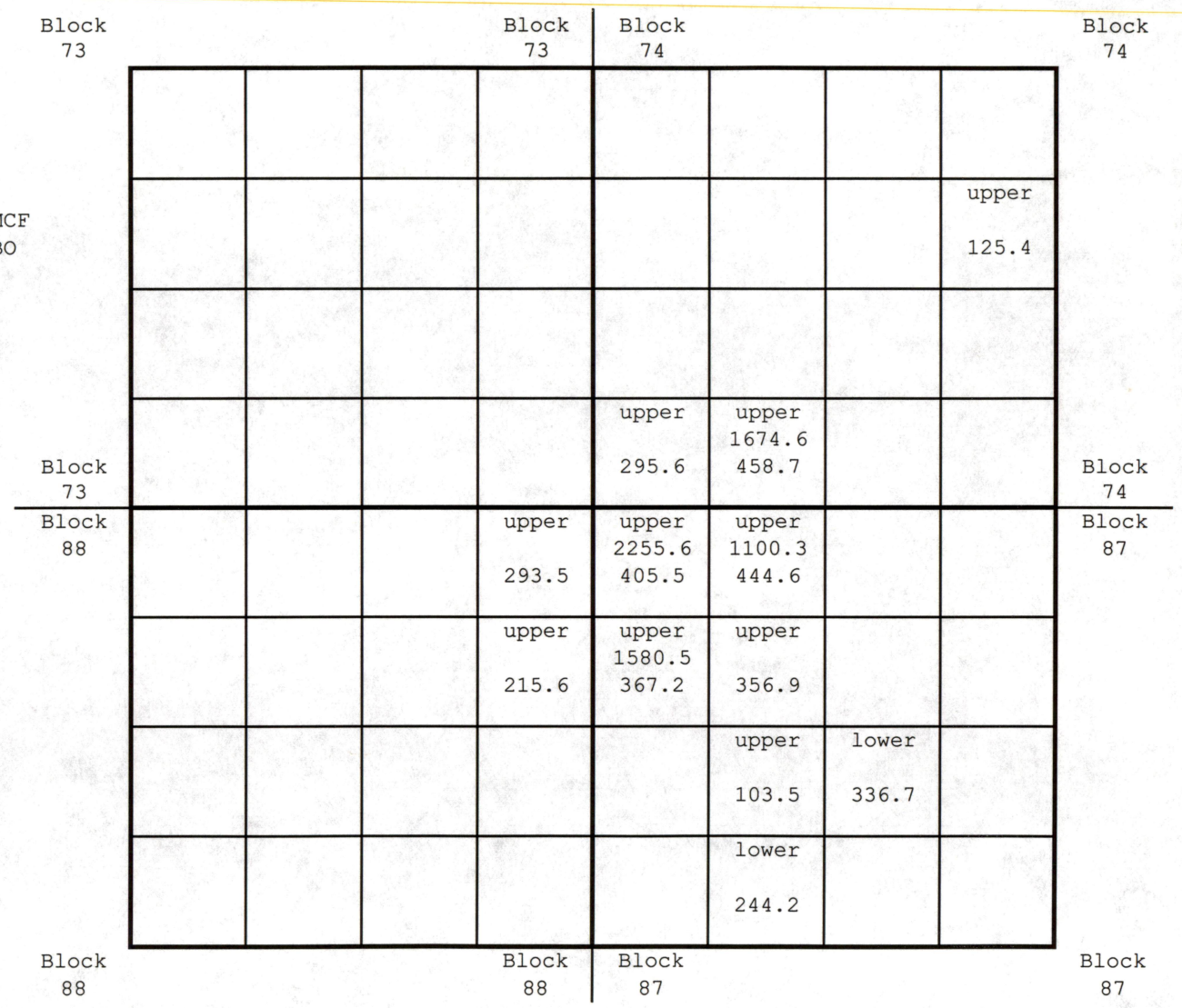
Oil Recovery Limit:
20 % *

Oil Recovery Volume
100 MBO *

Gas Recovery Limit:
30 % *

Gas Recovery Volume
1.00 BCF *

Low Fault-block Risk:
50 % prob. of success *



* See Targets-criteria spreadsheet to adjust prospect size and risk criteria