KELLY & POVICH, P.C.
ATTORNEYS AT LAW
2300 M Street, N.W., Suite 800, Washington, D.C. 20037

Writer's Direct Dial:
(202) 973-8102

Telephone: (202) 973-8100
Facsimile: (202) 973-8101

EX PARTE OR LATE FILED

March 30, 1998

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

Re: Ex Parte Presentation, PR Docket 89-552, GN Docket 93-252 & PP Docket No. 93-253

Dear Ms. Salas:

This letter will reply to the March 27, 1998 ex parte presentation of SMR Advisory Group, L.C. ("SMR Advisory") in the above-referenced proceeding.

In its letter, SMR Advisory notes that, among other petitioners seeking reconsideration of the FCC's *Third Report and Order*, 97-57 (March 12, 1997), INTEK submitted technical data establishing that the Phase I/Phase II co-channel protection requirements for the 220 MHz band that were adopted in the *Third R&O* failed to provide adequate protection to the operation of either Phase I or Phase II systems from harmful interference. INTEK, indeed, commissioned a study of the co-channel protection issue by Trott Communications Group ("TCG") and submitted a copy of the TCG study with its June 18, 1997 Reply in this proceeding. A copy of the TCG study is attached for your reference to this letter.

TCG concluded that use of a 28 dBu service contour (rather than the 38 dBu contour adopted in the *Third R&O*), is "consistent with that used in other similar services ... and consistent with the expected actual service area." TCG Study at 3. Most importantly, TCG concluded that by retaining the 38 dBu service contour as the benchmark for co-channel protection the Commission would impair the operations of both Phase I and Phase II systems and reduce the actual service area covered. For these reasons, INTEK continues to believe that use of the 28 dBu service contour for measuring the co-channel protection between Phase I and Phase II licensees is the minimum protection necessary to ensure the reliable and competitive operations of both Phase I and Phase II 220 MHZ band systems.

INTEK further understands that the Commission may be reviewing the spectrum efficiency standard for non-narrowband operations in the 220 MHz band adopted in the *Third R&O*. In its June 4, 1997 Comments on the Petitions For Reconsideration of the *Third R&O*, INTEK opposed any reconsideration of the efficiency standard, noting that the standard reflected a careful balancing which preserved the essential character of the 220 MHz band as a test bed for the development and deployment of advanced highly-spectrally efficient technologies while opening up the 220 MHz band for the introduction of non-narrowband technologies capable of meeting the efficiency standard. As INTEK noted in its Comments, although several parties petitioned the FCC to modify the efficiency standard, or to create an exception to the standard for paging services, no party petitioned the Commission to eliminate the standard on reconsideration. INTEK continues to urge the FCC to deny any requests for reconsideration of the efficiency standard.

If there are any questions concerning this matter, please contact this office.

Sincerely,

Robert B. Kelly

TROTT
COMMUNICATIONS GROUP

## INTRODUCTION

Trott Communications Group, Inc. has been retained by INTEK Diversified Corp. to evaluate the effects of the existing FCC Rules and the proposed amendment of Part 90 concerning use of the 220MHz-222MHz band. This report addresses the following issues:

1. Comparison of establishing the service contour at 38dBu to other mobile services
2. Comparison of the 38dBu service contour to actual predicted service area
3. Comparison of the current 38dBu rule to the proposed 28dBu rule
4. Effect of current and proposed Rules upon Phase 1 and Phase 2 licensees

The following analysis uses the current requirements of Part 90 - Subpart T of the Rules, which states that a licensee's 38dBu[F(50,50)] field strength establishes its regulatory protected service area and that a proposed co-channel licensee's station must protect this contour from its 28dBu[F(50,10)] interference contour if the co-channel station is proposed at less than 120 km from an existing licensee. These field strength calculations are made using R6602 propagation curves. In the comparison to other services, Part 90 - Subpart S concerning 800MHz/900MHz SMR protected service area and co-channel interference requirements are used.

## ANALYSIS

Field receiver performance is dependent upon the median RF signal voltage or power impressed upon its antenna terminals. Most modern receivers intended for mobile operations, regardless of frequency of operation, provide adequate performance with static receive voltages in the range of 0.25$\mu$V to 0.50$\mu$V, or expressed in decibel power form, -149dBw (-119dBm) to -143 dBw (-113dBm). If the service area boundary is expressed as a field strength in dBu (decibels referenced to 1$\mu$V/m), conversion formulas must be used in the assessment of performance. Since field strength is a function of both power and frequency, the conversion between field strength and receive signal level must include both factors. The following table depicts the relationship:

| Field Strength | Frequency | Rx Sig Level | Rx Sig Level | Rx Sig Level |
|---|---|---|---|---|
| *dBu* | *MHZ* | *dBw* | *dBm* | *$\mu$V* |
| 28 | 220 | -123.91 | -93.91 | 4.51 |
| 28 | 855 | -135.70 | -105.70 | 1.16 |
| 38 | 220 | -113.91 | -83.91 | 14.25 |
| 38 | 855 | -125.70 | -95.70 | 3.67 |
| 40 | 220 | -111.91 | -81.91 | 17.49 |
| 40 | 855 | -123.70 | -93.70 | 4.62 |

1425 Greenway Drive, Suite 350, Irving, Texas 75038, 972/580-1911, Fax: 972/580-0641, Email: trottgroup@aol.com

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This table indicates that a field strength of 40dBu at 855MHz is equivalent to a receiver input power of -94dBm, while the same receiver input power at 220MHz is equivalent to a field strength of 28dBu. The two frequency bands (220MHz and 855MHz) have differing performance characteristics which offset, such as environmental losses, environmental noise, and signal level variabilities. The propagation model used to predict the service area boundary compensates for the frequency dependent path loss differential. Therefore, at a service area boundary of 40dBu at 855MHz, the same level of performance can be expected as at a service area boundary of 28dBu at 220MHz. Both systems must also include margins to compensate for their own modulation implementation and other equipment efficiencies; however, similar modulation implementations would require similar margins regardless of frequency band.

The attached Figure 1 depicts the 28dBu service area contour of Roamer One's St. Louis, MO site calculated per R6602[F(50,50)] using actual parameters. This contour is overlaid on a propagation plot using the same parameters and the Okumura/Hata Extended propagation model as implemented by EDX, Inc. The 28dBu service contour closely approximates the actual coverage area expected from this site at these operational parameters.

In order to evaluate and compare the differences between the current Rules and those proposed, two co-channel stations, both operating at 500 watts ERP and 500 ft (152 meters) HAAT on perfectly flat terrain, have been assumed. The table below indicates the distance to the service contour [F(50,50)] and the interference contour [F(50,10)] for those two stations using R6602.

| Field Strength vs Contour Distance<br>500 ft. HAAT & 500 Watts ERP | | |
|---|---|---|
| Contour | Field Strength | Contour Dist |
| Service F(50,50) | 38dBu | 44.6 km |
| Interference F(50,10) | 28dBu | 74.2 km |
| | Minimum Separation | 118.8 km |
| Service F(50,50) | 28dBu | 64.5 km |
| Interference F(50,10) | 18dBu | 104.3 km |
| | Minimum Separation | 168.8 km |

This table indicates that using 28dBu rather than 38dBu to define the service contour extends the protected service area from 44.6 km to 64.5 km for either site. Likewise, using 18dBu rather than 28dBu to define the interference contour extends the distance from 74.2 km to 104.3 km for either site. Per the existing rules (38dBu service contour and 28dBu interference contour), the co-channel station's interference contour (28dBu) will not overlap the incumbent's service contour (38dBu) if the station separation is at least 118.8 km (44.6km + 74.2km). Using the proposed service and interference boundary field strength definition, a minimum separation of

168.8 km (64.5km + 104.3km) is required in order for the co-channel station's interference contour (18dBu) not to overlap the incumbent's service contour (28dBu). See Figure 3 depicting the contours at 170 km separation per proposed Rules. This increase in required separation is due to the proposed change in the definition of the service area contour while retaining the existing 10dB co-channel protection ratio.

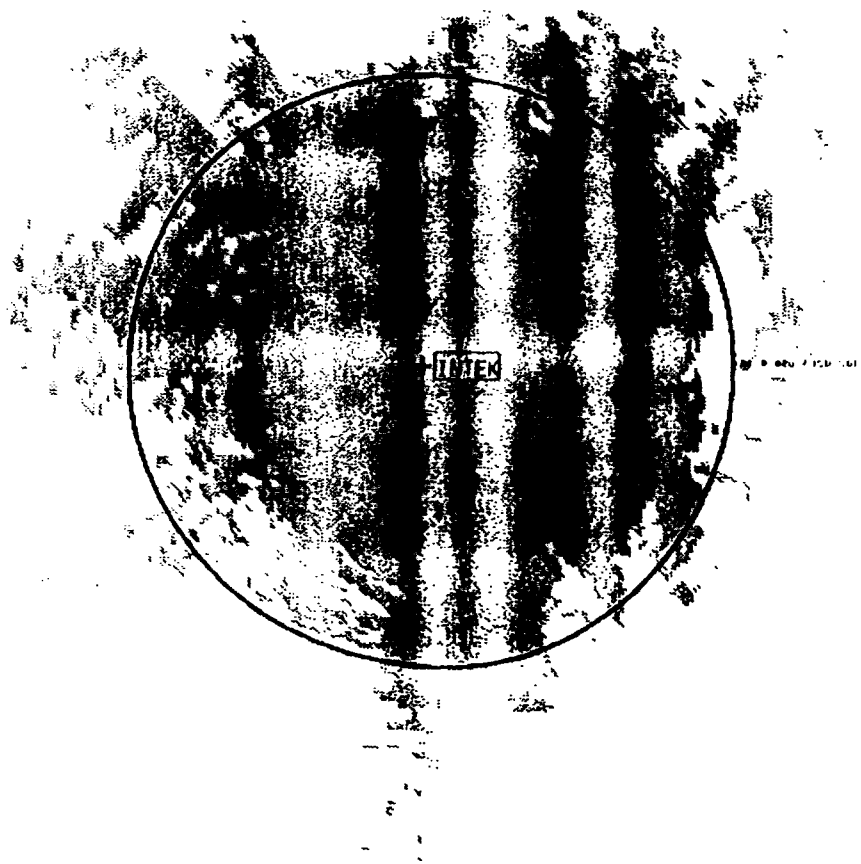
Based upon the proposed realistic service contour definition (28dBu), Figure 4 depicts the protected service area (38dBu) and interference contour (28dBu) of co-channel stations separated by 120 km per the existing Rules. In addition, the proposed 28dBu service contour is imposed on that figure. It is clear that area between the 38dBu and 28dBu service contours that falls within the 28dBu interference contour of the co-channel station cannot in any event be reliably served by Phase 2 stations due to co-channel interference from the Phase 1 station. Additionally, the area in question is well outside of both the 38dBu and 28dBu service contour of any potential Phase 2 station. The area within the 28dBu contour is 13,070 $km^2$ and the area within the 38dBu contour is 6,249 $km^2$.

## CONCLUSION

Based upon the above analysis, it is clear that the Rules should define the protected service area for 220MHz-222MHz stations at 28dBu. This is consistent with that used in other similar services providing like service and consistent with the expected actual service area. Retaining the 38dBu protected service area will decrease the actual area that otherwise would be served without co-channel stations. This decrease will be due to co-channel interference and will affect both the Phase 1 and Phase 2 licensees since similar conditions will exist for both stations.

This issue mandates serious consideration since it is not just an incumbent issue, but can have serious impact upon the operational service area of future licensees, since their normal service area will also be reduced by co-channel interference from incumbent Phase 1 licensees or other Phase 2 applicants.

George W. Weimer, P.E.
Trott Communications Group, Inc.
Vice President of Engineering




MSITE (tm): INTEK.MAP

Propagation model: Hata-extended/E-P diff
Time: 50.00% Loc: 50.00% Margin: .0 dB
Climate: Continental Temperate
Gndcvr: None
Atm. factor: None
K Factor: 1.333
RX Antenna: Omni
Height: 5.0 feet AGL Gain: .0 dBd

Received power (at remote)

> -94.0 dBmW
< -94.0 dBmW

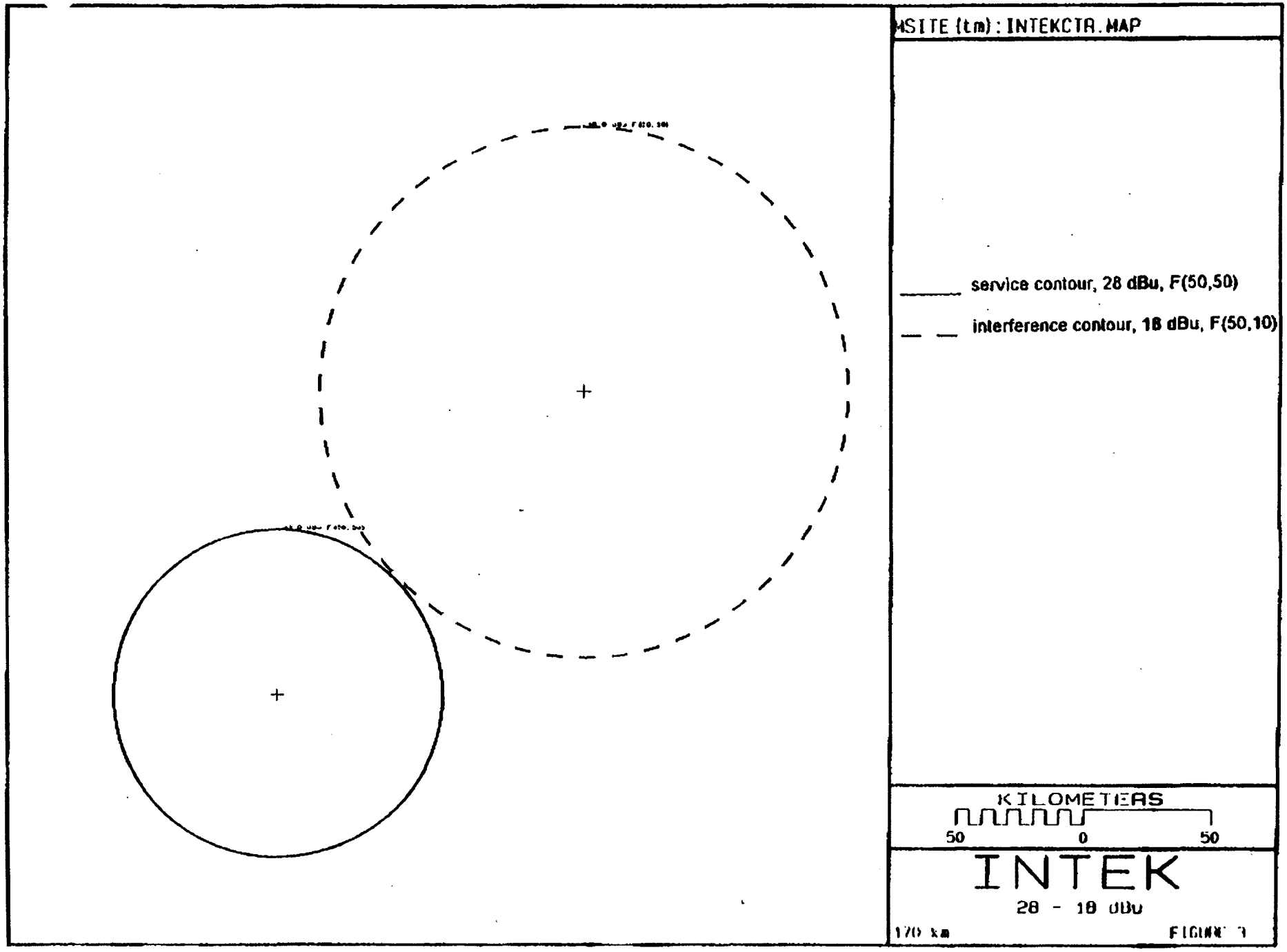
Minimum threshold level: -103.0 dBmW

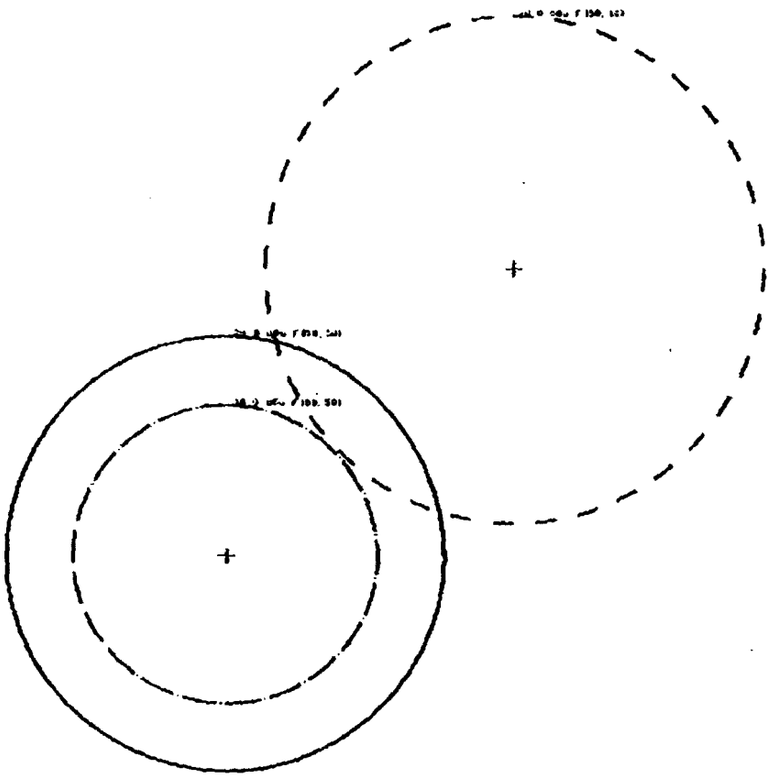
| Site | Ant Elv AMSL (feet) | ERPd (dBW) | Ant. Type /Orient. | Coordinates |
|---|---|---|---|---|
| INTEK * | 949.0 | 16.68 | OM-V | N 38 39 2.00 |
| grp: 1 | 220.0000 MHz | | | W 90 20 8.00 |

MILES
10 0 10 20 30

INTEK
ST LOUIS

COVERAGE FIGURE 1


MSITE (tm): INTEKCTR.MAP
service contour, 28 dBu, F(50,50)
interference contour, 18 dBu, F(50,10)
KILOMETERS
50
0
50
INTEK
28 - 18 dBu
170 km
FIGURE 3



MSITE (tm): INTEKCTR.MAP

— . — service contour, 38 dBu, F(50,50)

_____ service contour, 28 dBu, F(50,50)

— — interference contour, 28 dBu, F(50,10)

KILOMETERS

50 0 50

INTEK

LOST SERVICE AREA

FIGURE 4

TROTT
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# DECLARATION

I, George W. Weimer, P.E., declare under penalty of perjury that:

I am Vice President of Engineering for Trott Communications Group ("TCG"), Inc. an independent engineering company founded in 1978 and located in Irving, Texas. I am a registered professional engineer in the State of Texas (Reg No. 51628E).

Much of my work over the past 25 years has been in RF system design, interference and radio propagation analyses. In conjunction with the above work, I have conducted many analyses as they pertain to co-channel , time delay and delay spread interference.

TCG has been retained by INTEK Diversified Corp. to evaluate the effects of the existing FCC rules concerning the co-channel station separation between the Phase I and Phase 2 licensees. I have prepared the attached report.

The above statements are true to the best of my knowledge and belief.

George W. Weimer, P.E.
June 17, 1997

1425 Greenway Drive, Suite 350, Irving, Texas 75038, 972/580-1911, Fax: 972/580-0641, Email: trottgroup@aol.com

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# GEORGE W. WEIMER, P.E.
## VICE PRESIDENT OF ENGINEERING

George Weimer has more than 30 years experience in Land Mobile and Microwave Communications. His duties as Vice President of Engineering with Trott include:

- Analyzing functional and operational requirements and designing radio communication systems and upgrades for various clients.
- Helping clients prepare requirements documentation, manage configurations, and procure computer automation including CAD, records management and MDT systems.
- Assisting government, utility and private agencies with strategic and tactical planning.
- Designing microwave, fiber optics and radio common carrier systems including trunking, paging, mobile telephone and cellular radiotelephone.
- Designing multi-user antenna systems to control interference, performing interference studies and solving existing interference problems.

Before joining Trott, Mr. Weimer was a program manager and a project engineer with E-Systems, Inc., Commercial Division, in Arlington, Texas. A mobile digital system for the City of Miami, Florida was a three-year project that involved design of an 800 MHz conventional radio system and MDT and CAD systems. Mr. Weimer was responsible for system design, both digital and RF, and implementation, including testing.

While with E-Systems, Mr. Weimer also designed the transmitter control system for the City of Los Angeles Police Department simulcast radio system and a digital signaling system for a mobile data system for Orange County, California.

Mr Weimer also served as Communications Engineer for the State of Louisiana Department of Transportation. This assignment involved system planning and design, preparation of procurement specifications and implementation management.

While with the State of Louisiana, Mr. Weimer provided communications consultation to other state, local and federal government agencies for system design, evaluation, implementation and maintenance planning. He also served as Frequency Coordinator for the state's Highway Maintenance and Local Government Radio Services. He was a radio maintenance supervisor and microwave and a two-way radio technician for the Department of Highways. Here he gained in-depth experience in all phases of RF system maintenance, scheduling, and supervision.

Mr. Weimer is an APCO member, IEEE member and a Fellow of The Radio Club of America. He holds a Bachelor of Science degree in Electrical Engineering from Louisiana State University and is a Registered Professional Engineer in the State of Texas.

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# High LTVs Outperform Home Equities

By Terry Peters

*New York*-Pools of high loan-to-value debt consolidation loans have significantly outperformed conventional home equity loan pools, according to analysts at Fitch IBCA Inc.

Data available as of December 1997 showed that delinquencies in high-LTV loan pools - also known as 125-LTV mortgages or 125s - were only 0.59% in the first six months, less than one-fifth of the 3.04% in traditional HEL pools, the rating agency said.

However, the analysts cautioned investors to keep in mind that high-LTV loans are unseasoned and haven't been subjected to an economic downturn.

In addition, although delinquency rates were much lower for 125 pools, losses were 0.06% for the 125s, compared with only 0.01% for the conventional HELs.

Fitch IBCA said the higher losses were to be expected because defaulted 125s "are rarely taken through the foreclosure process, but are written off after six months."

The securitization of high-LTV loans is one of the fastest growing areas of the asset-backed securities market. It hit $8 billion in 1997, and Fitch IBCA predicted that it will exceed $10 billion this

*Although delinquencies were lower for high LTVs, home equities had fewer losses.*

500 to low 600 range for A-minus/B subprime borrowers, according to Fitch IBCA.

Their household income averages about $60,000 (compared with median household income of about $34,000 for all subprime borrowers), their residency has been established for four to five years, and their length of current employment averages five years or more, the Fitch IBCA analysts reported.

Concerning high debt burdens, the analysts noted that 125 borrowers are often taking "significant" amounts of cash out, thereby creating "a potential for overextension."

In their discussion of future research topics, the analysts cited the importance of this issue.

"One of the most relevant questions is to what extent and how quickly borrowers will subsequently 'reload' on revolving credit lines once their overall payments have been reduced through 125 LTV loans," they said.

Some lenders have adopted the practice of periodically rescoring portfolios to track the direction of credit profiles, and scores have generally risen in such cases, according to Fitch IBCA. But the analysts said this is to be expected when a heavily indebted borrower converts consumer debt to mortgage debt.

The 125 product "is not sufficiently seasoned to draw any conclusions about potential credit erosion from reloading," they cautioned, adding that the rating agency "will monitor future rescorings of portfolios as part of its surveillance of 125 LTV product."

Another significant finding of the report is that typical triple-A credit enhancement levels for 125s can withstand [illegible] of 30%-40% of the pool,